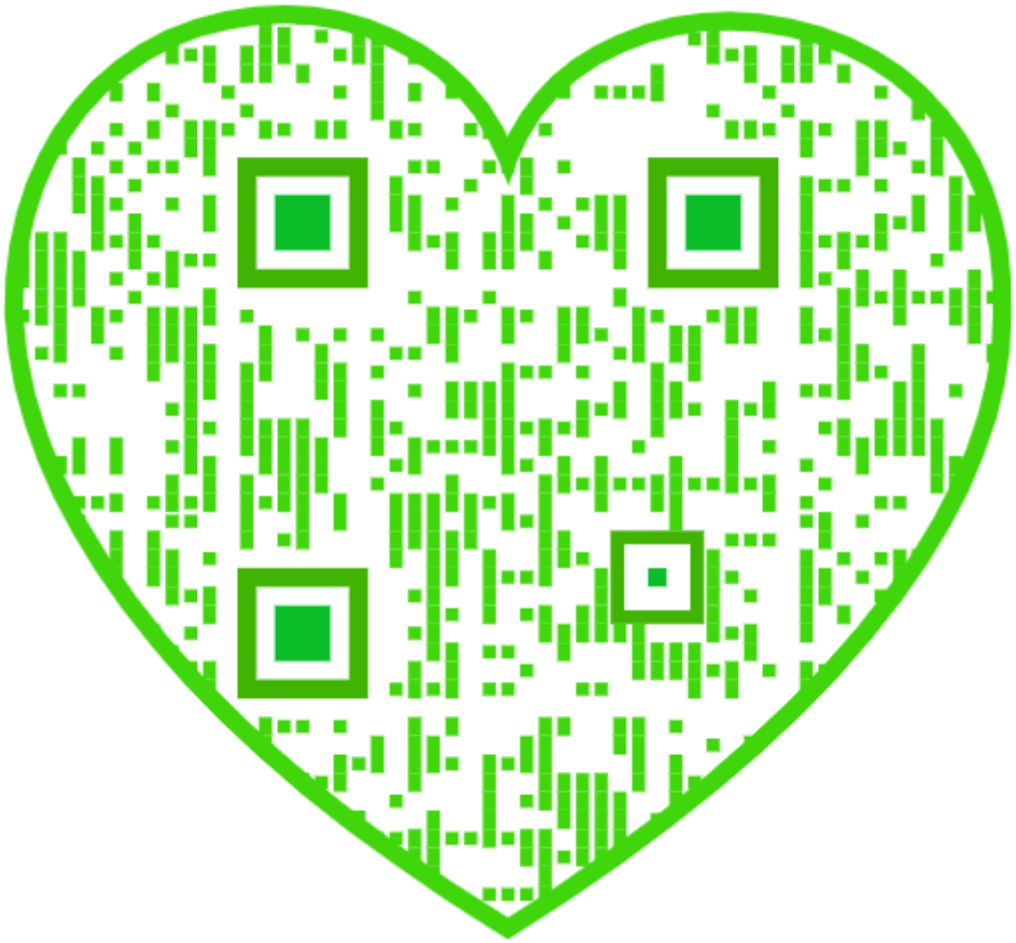

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JANUARY 1924

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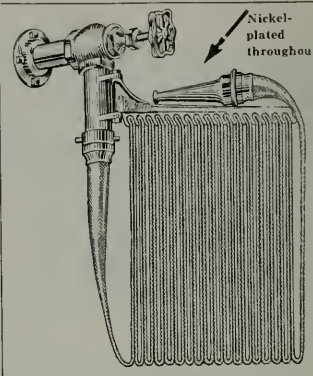

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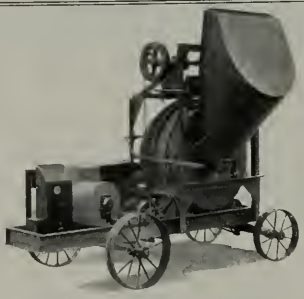

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"Quality First"
ELECTRICAL CONSTRUCTION
CONTRACTING . WIRING . FIXTURES MOTORS . SUPPLIES . REPAIRING
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ARCHITECTS' SPECIFICATION INDEX—Continued

T. B. Goodwin, 180 Jessie St., San Francisco..
McLeran & Co., R., Hearst Bldg., San Francisco.
Vukicevich & Bagge, 815 Bryant St., San Francisco.
Peters Construction Company, 705 Atlas Building, San Francisco, and Builders' Exchange, Oakland.
Robert Trost, 26th and Howard Sts., San Francisco.
I. M. Sommer, 401 Balboa Bldg., San Francisco.
Jas. L. McLaughlin, 251 Kearny St., San Francisco.
Alfred H. Vogt, 185 Stevenson St., San Francisco.
Lange and Bergatrom, Sharon Bldg., San Francisco and Washington Bldg., Los Angeles.
David Nordstrom, 4146 Emerald Street, Oakland.
Carl T. Peterson, 185 Stevenson St., San Francisco.

CONTRACTORS' EQUIPMENT
Edward R. Bacon Co., Folsom at 17th St., San Francisco, and Los Angeles.

CONVENIENCE OUTLETS
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St.

CORK TILE
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.
David E. Kennedy, Sharon building, San Francisco, and Story building, Los Angeles.

CORK TILE FOR FLOORS
Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles, St., Los Angeles.
David E. Kennedy, Sharon Building, San Francisco, Story Building, Los Angeles.

CRUSHED ROCK
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.

CURTAINS—STEEL, ROLLING, FIREPROOF
J. C. Wilson Corp., 621 N. Broadway, Los Angeles.

DAMP-PROOFING AND WATERPROOFING
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
"Imperial," manufactured by Brooks & Doerr, Merchants National Bank Building, San Francisco.
Minwax Co., Inc., 22 Battery St., San Francisco, and 653 S. Clarence St., Los Angeles.
Samuel Cabot Co., Boston; represented in San Francisco by Pacific Materials Co., Underwood Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by the Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco

DOOR HANGERS
Pitcher Hanger, sold by National Mill & Lumber Co., 326 Market St., San Francisco.
Richard-Wilcox Mfg. Co., the Ewing-Lewis Co., 626 Underwood Building, San Francisco.
Stanley Works, New Britain, Conn., Monadnock Bldg., San Francisco.

DRAIN PIPE AND FITTINGS
"Corrosiron" Acid Proof, manufactured by Pacific Foundry Co., Harrison and 18th Sts., San Francisco.

DRINKING FOUNTAINS
Hawa Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 166-7th St., San Francisco.
San Francisco Elevator Company, Inc., 860 Folsom St., San Francisco.
Elevator Supplies Co., Inc., Hoboken, N. J.; San Francisco office, 186 Fifth St.
"Chelsea" dumb waiters, sold by M. E. Hammond, Pacific building, San Francisco.

ELECTRICAL CONTRACTORS
Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 956 Folsom St., San Francisco.
Central Electric Company, 177-79 Minna St., San Francisco
NePage, McKenny Co., 589 Howard St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
H. S. Tittle, 85 Columbia Square, San Francisco
Brown-Langlais Electrical Construction Co., 315 Fifth Street, San Francisco.
Newberry Electric Company, Alta Bldg., San Francisco
Smith Electric Company, 50 Natoma St., San Francisco.
Decker Electrical Construction Company, 149 New Montgomery St., San Francisco.
Electric Construction Company, 616 Broadway, Fresno.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Pacific Bldg., San Francisco.

ELECTRICAL PLUGS, RECEPTICALS, SOCKETS, ETC.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
"H. & H. Switches," Garnett Young & Co., 612 Howard St., San Francisco.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St.
Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.

ELECTRIC SAFETY INTERLOCKS
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.

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Independent Automatic Sprinkler Company
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O. T. Johnson Building, Los Angeles 72 Natoma Street, San Francisco

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ARCHITECTS' SPECIFICATION INDEX—Continued

ELECTRIC HEATING
Wesix Electric Heaters, manufactured by W. Wesley Hicks, Rialto Building, San Francisco.

ELEVATORS—PASSENGER and FREIGHT
Pacific Elevator & Equipment Co., 1129 Howard Street, San Francisco.
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 166-7th St., San Francisco.
San Francieco Elevator Co., 860 Folsom St., San Francisco.
Van Emon Elevator Company, 1159 Howard St., San Francisco.

ELEVATOR MOTORS AND CONTROL
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and First National Bank Bldg., San Francisco, Calif.

ELEVATOR SIGNALS, DOOR EQUIPMENT, ETC.
Elevator Supplies Co., Inc., Hoboken, N. J.; San Francisco office, 186 Fifth St.
Randall Control & Hydrometric Corporation, 265A Minna St., San Francisco, and 523 Central Bldg., Los Angeles.
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.

ENGINEERS — CONSULTING, ELECTRICAL, MECHANICAL
Hunter & Hudson, Rialto Bldg., San Francisco.
Robert L. St. John, 1011 Flat Iron Bldg., San Francisco
Charles T. Phillips Company, Bank of Italy Bldg., San Francisco, and Roberts Bldg., Los Angeles.

FAIENCE TILE
Tropico Potteries, Inc., Glendale, Cal.

FELTS
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

FENCES—WIRE AND IRON
Standard Fence Company, 432 Bryant, San Francisco and 60th and Lowell Sts., Oakland.

FIRE BRICK, TILE & CLAY
Livermore Fire Brick Works, 604 Mission St., San Francisco.

FIRE EXIT LATCHES
Vonnegut Hardware Co., Indianapolis, Ind., represented in San Francisco by Abeel Jensen Co., Call Building.

FIRE ESCAPES
Michel & Pfeffer Iron Works, 1415 Harrison St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.

FIRE HOSE RACKS
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

FIRE-PROOF DOORS
Forderer Cornice Works, 269 Potrero Ave., San Francisco.
U. S. Metal Products Co., 330-10th St., San Francisco.
Kinnear Mfg. Co., represented in San Francisco by Pacific Materials Co., Underwood Bldg.
The J. G. Wilson Corporation, 621 North Broadway, Los Angeles.

FIRE SPRINKLERS—AUTOMATIC
Fire Protection Engineering Co., 142 Sansome St., San Francisco.
Grinnell Company of the Pacific, 453 Mission St., San Francisco.
Independent Automatic Sprinkler Co., 72 Natoma St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIRE RETARDING PAINT
The Paraffine Companies, Inc., 34 First St., San Francisco.
Fire Retardent Products Co., 2838 Hannah St., Oakland. Cal.

FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Company, 218-13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOORS, BLOCK
Carter, Bloxonend Flooring Co., Kansas, Mo., represented on Pacific Coast by H. M. Holway, 1007 Hobart Building, San Francisco.

FLOOR CLIPS
Bull Dog Floor Clip Sales Co., 77 O'Farrell St., San Francisco, and 600 Metropolitan Bldg., Los Angeles.

FLOORING, HEAVY DUTY
Carter, Bloxonend Flooring Co., Kansas, Mo., represented on Pacific Coast by H. M. Holway, 1007 Hobart Building, San Francisco.

FLOORS—TILE, CORK, ETC.
Mangrum & Otter, 827 Mission St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

FLOORS—HARDWOOD
Oak Flooring Bureau, Ashland Block, Chicago, Ill.
Cadwallader, Gibson Co., 5th & Brannan St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
Strable Hardwood Company, 511 First St., Oakland.
E. L. Bruce Co., Manufacturers, Memphis, Tenn.
White Bros., 5th and Brannan Sts., San Francisco.
J. E. Higgins Lumber Company, 423 Sixth St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—Continued

FLOOR TREATMENT—HARDWOOD, COMPOSITION AND CONCRETE
Minwax Co., Inc., 22 Battery St., San Francisco and 653 S. Clarence St., Los Angeles.
FLOORS—MASTIC—FLOOR COVERING
Hill, Hubbell & Company, 115 Davis St., San Francisco.
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.
FLUE LINING
California Brick Company, 604 Mission St., San Francisco.
FLUSH VALVES
Ilandy Self-Cleaning Flush Valve Co., 731 Folsom St., San Francisco.
FUEL OIL SYSTEMS
S. T. Johnson Co., 1337 Mission St., San Francisco.
S. F. Bowser & Co. Inc., 612 Howard St., San Francisco.
Wayne Tank and Oil Co., 430 Fourth St., San Francisco.
FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.
C. B. Babcock Company, 768 Mission St., San Francisco.
FURNITURE—OFFICE, SCHOOL, CHURCH,
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., Second and Mission Sts., San Francisco.
W. & J. Sloane, 216 Sutter St., San Francisco.
Western States Seating Co., 39 Second St., San Francisco.
H. Rumph, 567 Howard St., San Francisco.
Fink & Schindler Company, 218-19th St., San Francisco.
FURRING TILE (Burned Clay)
California Brick Company, 604 Mission St., San Francisco.
GARAGE HARDWARE
The Stanley Works, New Britain, Conn., Coast sale offices, San Francisco, Los Angeles and Seattle, Wash.
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.
GARDEN FURNITURE
Art Stone Distributing Company, 2-4 Valencia St., at Market, San Francisco.
GAS HEATING
Pittsburg Water Heater Company, 478 Sutter St., San Francisco.
Ruud Automatic Water Heater, sold by Ruud Heater Company, 431 Sutter St., San Francisco.
C. B. Babcock Company, representing General Gas Light Company, 768 Mission St., San Francisco.
GLASS
American Window Glass Co., represented by L. H. Butcher Co., 862 Mission St., San Francisco.
Cobbledick-Kibbe Glass Co., 666 Howard St., San Francisco.
Fuller & Goepp, 32 Page St., San Francisco, and Jackson, at Eleventh St., Oakland.
W. P. Fuller & Company, all principal Coast cities.
GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.
GRANITE
Raymond Granite Co., Potrero Ave., and Division St., San Francisco.
GRAVEL AND SAND
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.
GYMNASIUM EQUIPMENT—LOCKERS, ETC.
Ellery Arms Co., 583 Market St., San Francisco.
HARDWALL PLASTER
"Empire," manufactured by Pacific Portland Cement Co., Pacific Building, San Francisco; Portland, San Jose and Los Angeles.
HARDWARE
Joost Bros., agents for Russell & Erwin Hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn.; Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
Corbin hardware, sold by Palace Hardware Co., 581 Market St., San Francisco.
Vonnegut hardware, sold by Abeel-Jensen Co. Call Bldg., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill.; Ewing-Lewis Co., 626 Underwood Building, San Francisco.
HARDWOODS
White Brothers, 5th and Brannan Streets, San Francisco.
HEATING AND VENTILATING CONTRACTORS
Atlas Heating and Ventilating Company, Inc., Fourth and Freelon Sts., San Francisco.
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Lawson & Drucker, 450 Hayes St., San Francisco.
Lupen and Hawley, 906 7th St., Sacramento.
William F. Wilson Co., 328 Mason St., San Francisco.
W. H. Picard, 5656 College Ave., Oakland.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
H. G. Newman Co., 2004 Telegraph Ave., Oakland.
HEATING & VENTILATING EQUIPMENT
W. S. Haines & Co.'s steam specialties. O. M. Simmons Company, 115 Mission St., San Francisco.
Hulting, Hurst & Hulting, representing Jas. P. Marsh Co., Monadnock Bldg., San Francisco.

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"Twenty-four years of satisfactory service."
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ARCHITECTS' SPECIFICATION INDEX—Continued

Illinois Engineering Co., 417 Market St., San Francisco.
Williams Radiator Company, 571 Mission St., San Francisco.
Warren Webster & Company, Sharon Building, San Francisco.

HEATERS, GAS GRATES, RADIATORS, ETC.
General Gas Light Company, 768 Mission St., San Francisco.
Ra-Do Fumeless Gas Radiators, Potter Radiator Corporation, 478 Sutter St., San Francisco
Humphrey Radiantfire, sold by Rudd Heater Company, 431 Sutter St., San Francisco.
Williams Radiator Company, "Gas Steam Radiators," 571 Mission St., San Francisco.
McLaughlin Metal Works, 223 J St., Sacramento.

HOLLOW BUILDING TILE (Burned Clay)
California Brick Company, 604 Mission St., San Francisco.

HOLLOW TILE BLOCKS
Cannon & Co., plant at Sacramento; 77 O'Farrell St., San Francisco.
California Brick Company, 604 Mission St., San Francisco.
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

HOSE—UNDERWRITERS UNLINED LINEN—RUBBER
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEMS
Chicago Signal Co., represented by Garnett Young & Co., 612 Howard St., San Francisco.

ICE MAKING MACHINERY
Cyclops Iron Works, 837 Folsom St., San Francisco.
"Frigedaire," Sold by W. L. Cochran, 880 Mission St., San Francisco.

INCINERATORS
The Incinerite, sold by M. E. Hammond, Mezzanine, Pacific Building, San Francisco.

INDUSTRIAL LIGHTING EQUIPMENT
Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., and First National Bank Building, San Francisco.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and 10th and Bryant Sts., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.

JAIL EQUIPMENT
Ralston Iron Works, 20th and Indiana Sts., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE ARCHITECT
Emerson Knight, 704 Market St., San Francisco.
Cotton & Co., Call Building, San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 514-516 Phelan Bldg., San Francisco.

LATHING AND PLASTERING
MacGruer & Simpson, 226 Tehama St., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.

LATHING MATERIAL—WIRE, METAL, ETC.
Buttonlath Manufacturing Co., Los Angeles and 207 Balboa Bldg., San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco
Truscon Steel Co., 709 Mission Street, San Francisco.
Wickwire Spencer Steel Corporation, 144 Townsend St., San Francisco.
United Alloy Steel Corporation, Canton, Ohio; Western Sales Office, Santa Fe Building, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.
Pacific Gas & Electric Co., Sutter St., San Francisco.

LIGHTING FIXTURES
Benjamin Electric Mfg. Co., New York, Chicago, 580 Howard St., San Francisco.
D. Dierssen Co., 20 Second Street, San Francisco. Distributors Solar-Lite fixtures.
Roberts Mfg. Co., 663 Mission St., San Francisco.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St., San Francisco.

LIMESTONE, INDIANA
Indiana Limestone Quarrymen's Association, Box 770, Bedford, Indiana.

LINOLEUM
D. N. & E. Walter & Co., 562 Mission St., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.
W. & J. Sloane, 216 Sutter St., San Francisco.
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.
Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles St., Los Angeles.

LINOTILE
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.

LUMBER
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland, Los Angeles and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.

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Telephone Douglas 5541

ARCHITECTS' SPECIFICATION INDEX—Continued

Santa Fe Lumber Co., 16 California St., San Francisco.
J. E. Higgins Lumber Company, 423 Sixth St., San Francisco.
Sunset Lumber Company, First and Oak Sts., Oakland.
White Bros., 5th and Brannan Sts., San Francisco.

MANTELS—WOOD, TILE, ETC.
Mangrum & Otter, 827-831 Mission St., San Francisco.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Ray Cook Marble Company, foot of Powell St., Oakland.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.
Tompkins-Kiel Marble Company, 505 Fifth Ave., New York; also Chicago, Philadelphia and San Francisco.
Columbia Marble Co., 413 Rialto Bldg., San Francisco.

METAL DOORS AND WINDOWS
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 330 Tenth St., San Francisco.

METAL FURNITURE
Forderer Cornice Works, 269 Potrero Ave., San Francisco.
United Alloy Steel Corporation, Canton, Ohio; Western Sales Office, Santa Fe Building, San Francisco.

METAL STORE FRONTS
Cobbledick-Kibbe Glass Company, 666-8 Howard street, San Francisco, and Washington at Third St., Oakland.

MILL WORK
Pacific Manufacturing Company, San Francisco, Los Angeles, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
Lannom Bros. Mfg. Co., 5th and Magnolia Sts., Oakland.
The Fink & Schindler Company, 218-13th St., San Francisco.

OIL BURNERS
Bunting Iron Works, 1215 First Nat. Bank Bldg., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
G. E. Witt Co., 862 Howard St., San Francisco.
W. S. Ray Mfg. Company, Rialto Bldg., San Francisco, and 2206 San Pablo Ave., Oakland.
Rotary Oil Burner Company, 159 Twelfth St., Oakland.

OIL STORAGE AND DISTRIBUTING STATIONS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Oil Tank & Pump Co., 430 Fourth St., San Francisco; 830 S. Los Angeles St., Los Angeles.

ORNAMENTAL IRON AND BRONZE
California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Federal Ornamental Iron and Bronze Co., 16th St., and San Bruno Ave., San Francisco.
Michel & Pfeffer Iron Works, 1415 Harrison St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

PANIC DOORS
Vonnegut hardware, sold by Abeel-Jensen Co. Call Bldg., San Francisco.

PAINT FOR CEMENT AND STUCCO
Wadsworth, Howland & Co., Inc., Jas. Hambly & Son, 1333 E. 7th St., Los Angeles, and 229 Clay St., San Francisco.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
The Paraffine Companies, Inc., 34 First St., San Francisco.
Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
Hill, Hubbell & Company, 115 Davis St., San Francisco.

PAINTING, TINTING, ETC.
I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
A. Quandt & Son, 374 Guerrero St., San Francisco.
Artistic Painting Company, 39 Tehama St., San Francisco.

PAINTS, OILS, ETC.
Magner Bros., 414-424 Ninth St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco and all principal Coast cities.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
Standard Varnish Works, 55 Stevenson St., San Francisco.
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.
Fire Retardent Products Co., 2838 Hannah St., Oakland, Cal.
Oakley Paint Manufacturing Company, 727 Antonia St., Los Angeles, and Hearst Building, San Francisco.

PARTITIONS—FOLDING AND ROLLING
J. G. Wilson Corporation, 621 N. Broadway, Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Farncisco.

SILENT CALL Chicago HOSPITAL SIGNAL SYSTEMS
GARNETT YOUNG AND COMPANY
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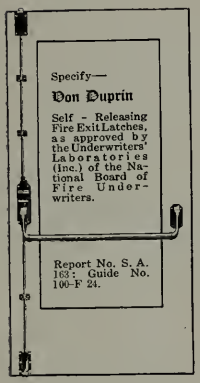
Von Duprin

Self-Releasing Fire Exit Latches

PROGRESS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Compared to the Von Duprin latch of today, the first model was a crude, cumbersome thing.

Yet that first Von Duprin latch was a revolutionary step in door hardware design. For the first time in history the inmates of large buildings were assured of safe exit, once they reached the doors. The deadly crash at the exits was defeated.

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Complete details in "Sweet's," pages 1415-1419, or ask us for Catalog 12-L.

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ARCHITECTS' SPECIFICATION INDEX—Continued

PLASTERING CONTRACTORS
A. Knowles, Call Bldg., San Francisco.
MacGruer & Simpson, 266 Tehama St., San Francisco.

PLASTER REINFORCEMENT
National Steel Fabric Co., A. C. Rulofson Co., Pacific Coast Sales Manager, Monadnock Building, San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.
Luppen & Hawley, 906 7th St., Sacramento.
W. H. Picard, 5656 College Ave., Oakland.
H. G. Newman Company, 2004 Telegraph Ave., Oakland.

PLUMBING SUPPLY HOUSES
Crane Company, all principal coast cities.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
H. Mueller Manufacturing Company, 1072-76 Howard St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
West Coast Porcelain Manufacturers, 334-335 Wells Fargo Building, 85 Second St., San Francisco.

POLES AND PILING
Santa Fe Lumber Co., 16 California St., San Francisco.

PUMPS—HAND OR POWER
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Pelton Water Wheel Co., 2022 Harrison St., San Francisco.
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
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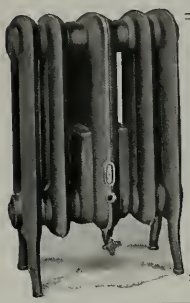

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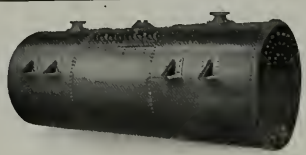

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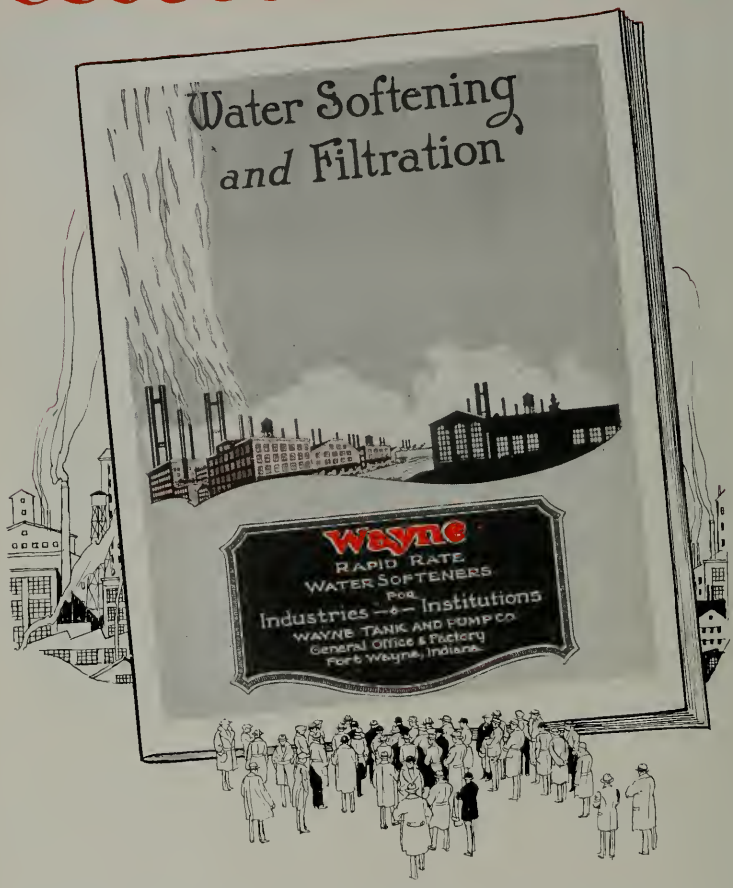

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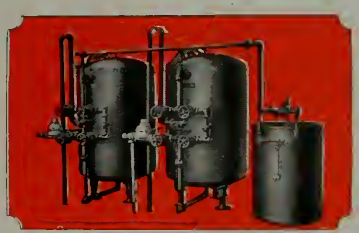

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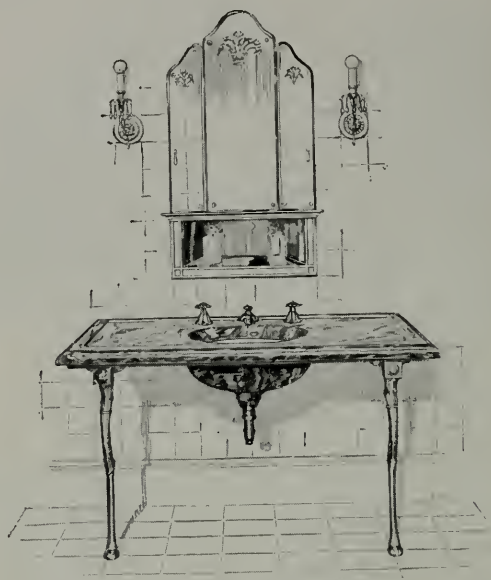

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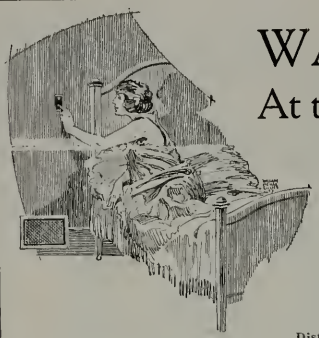

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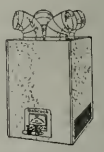

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VOL. LXXVI
No. 1

Some Apartment Houses and Other Buildings.

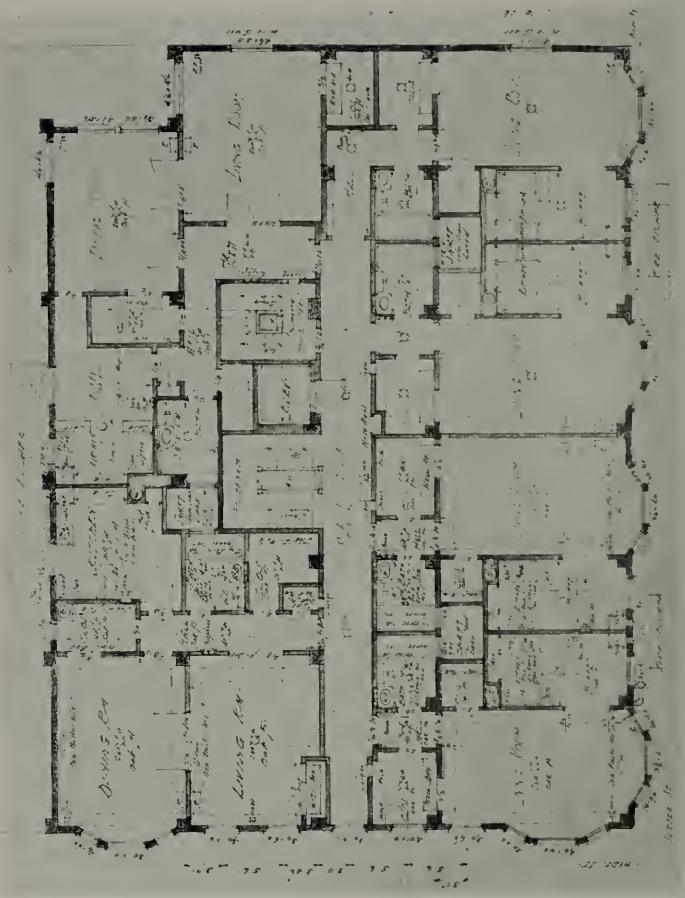
By FREDERICK JENNINGS

IN the following pages will be found a varied showing of hotels, apartment houses, flats and private homes, designed by Messrs. H. C. Baumann and Edward Jose of San Francisco. A majority of the buildings are creditable examples of present day tendency to combine good architecture with modern facilities for comfort and convenience. Baumann apartment houses show unmistakable evidence of study and careful planning. The exteriors are as attractive as the interiors are "homey" and livable. What more could one wish? There is a refreshing absence of the stereotyped four walls and uninteresting entrances in the apartments here illustrated. The facades, though plain in many instances, possess character, the entrances are generously proportioned and ornate, windows are large enough to permit of abundant sunshine and wide, over-hanging cornices have, in some of the most recent designs, been eliminated, thereby giving more light to the upper stories.

Structurally most of the buildings are of reinforced concrete, which material not only insures a substantial building but permits of a different treatment than is possible with frame construction. For example, note the absence of ungainly over-hanging galvanized cornices, so much in evidence in some of the older buildings in San Francisco.

Heretofore the tendency in apartment house construction in San Francisco has been to crowd too many rooms into a building where ground values are high. This was thought necessary in order to obtain sufficient income on the investment. The experience of Messrs. Baumann and Jose has been that fewer rooms on a floor, with plenty of closet space, light and ventilation, will command higher rental than narrow hall-ways and court apartments possessing limited ventilation and light.

The average life of a Class C or frame apartment house varies from twenty-five to forty years, with a possible depreciation of from 2 to 5 per cent. In twenty years time the average apartment house in the classes referred to above, is no longer in the first class and consequently



PLAN, APARTMENT HOUSE FOR MR. JAMES WELSH
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APARTMENT HOUSE FOR MR. JAMES WELSH, SAN FRANCISCO
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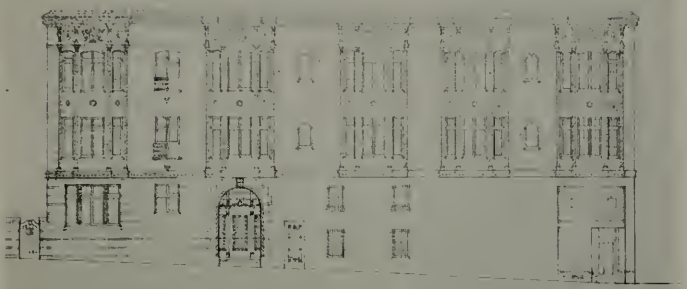
the rentals must be materially reduced. It has been the aim of Messrs. Baumann and Jose to encourage high class construction whenever possible and that their judgment in this respect has been sound is borne out by a recent transaction where substantial profits were obtained. The average cost of a frame apartment house today is from $1,000 to $1200

APARTMENT HOUSE FOR MR. CHAS. A. JOHNSON, SAN FRANCISCO
Baumann and Jose, Architect and Engineer

per room; Class C $1400 per room, and Class A approximately $2000 per room. Most of the new apartment buildings in the down town section of San Francisco have two and three room suites which bring average rentals of $65.00 per month for the former and $85.00 per month for the latter. Apartments in the outside districts having from five to eight rooms bring a monthly rental of from $125.00 to $250.00.



ELEVATION, APARTMENTS FOR MR. JACOB WEISSBEIN
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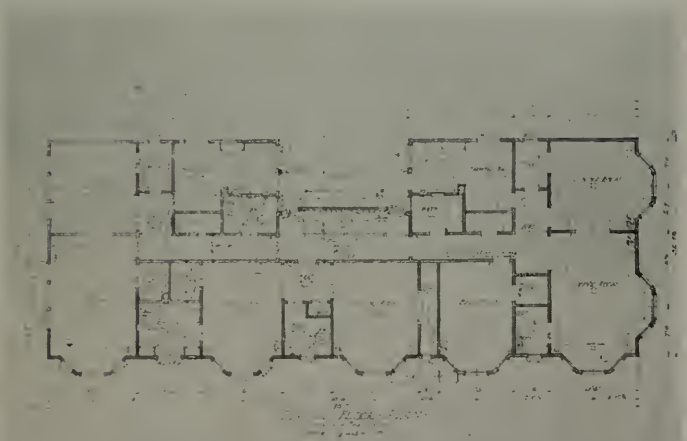

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APARTMENT HOUSE FOR MR. D. J. CLANCEY, SAN FRANCISCO
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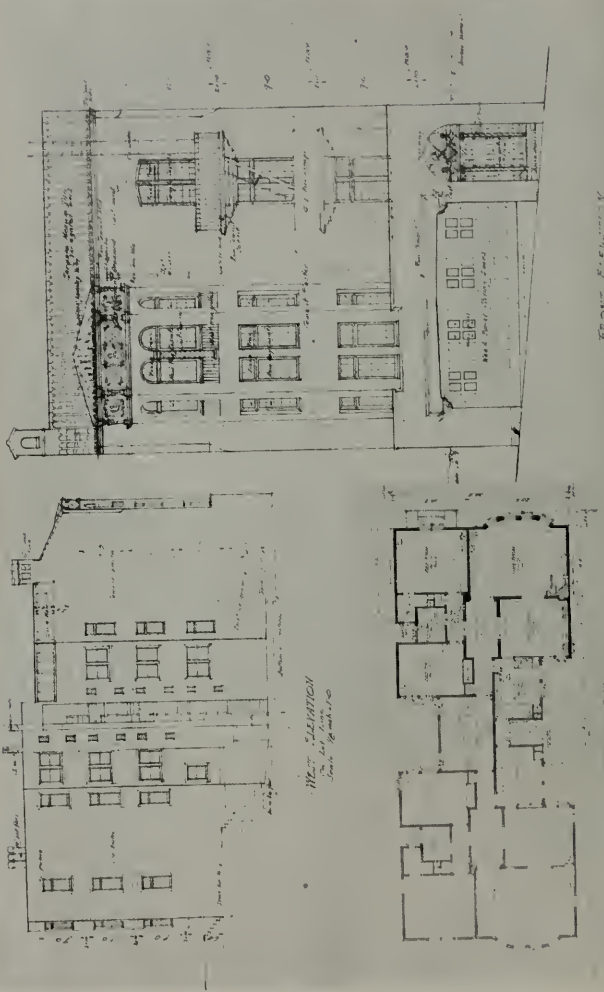

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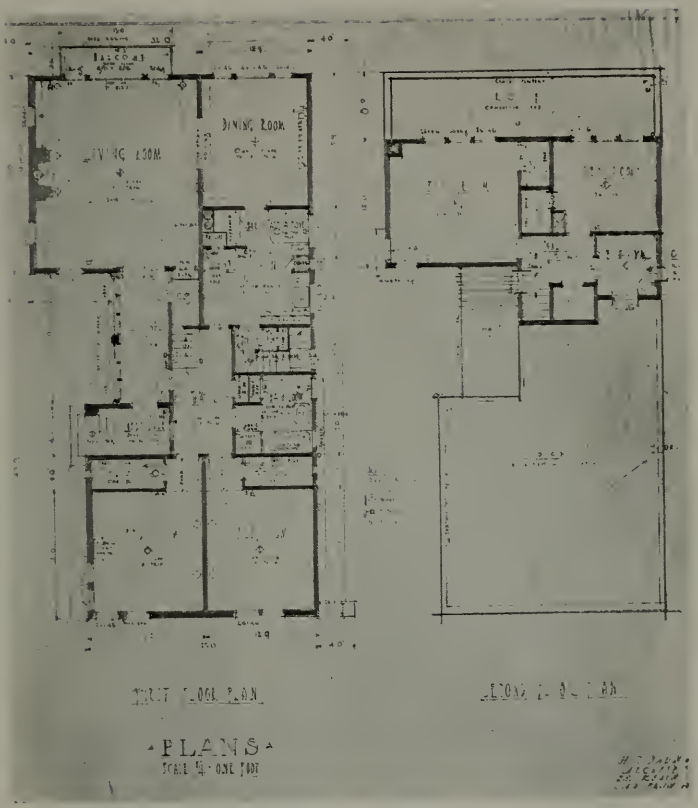

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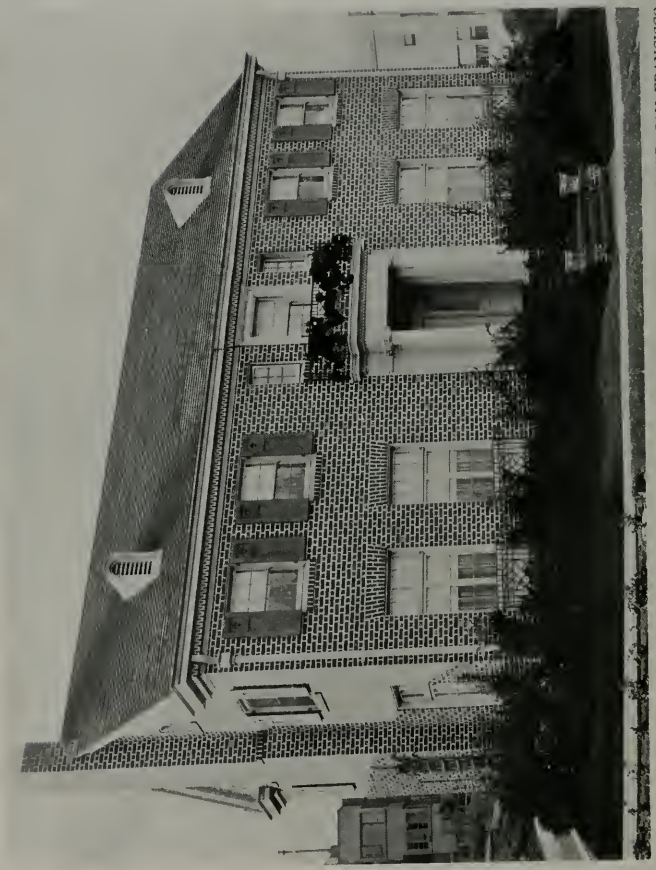

HOUSE FOR MR. K. E. PARKER, SAN FRANCISCO
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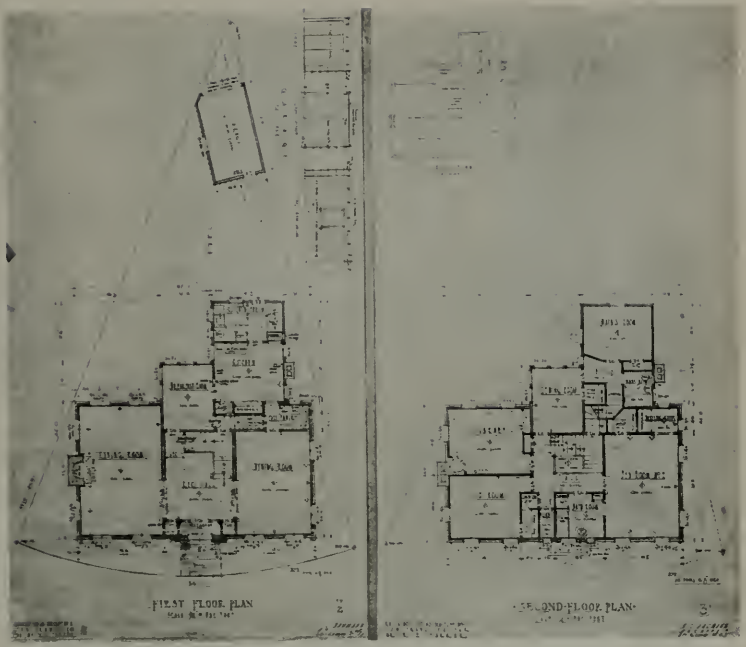


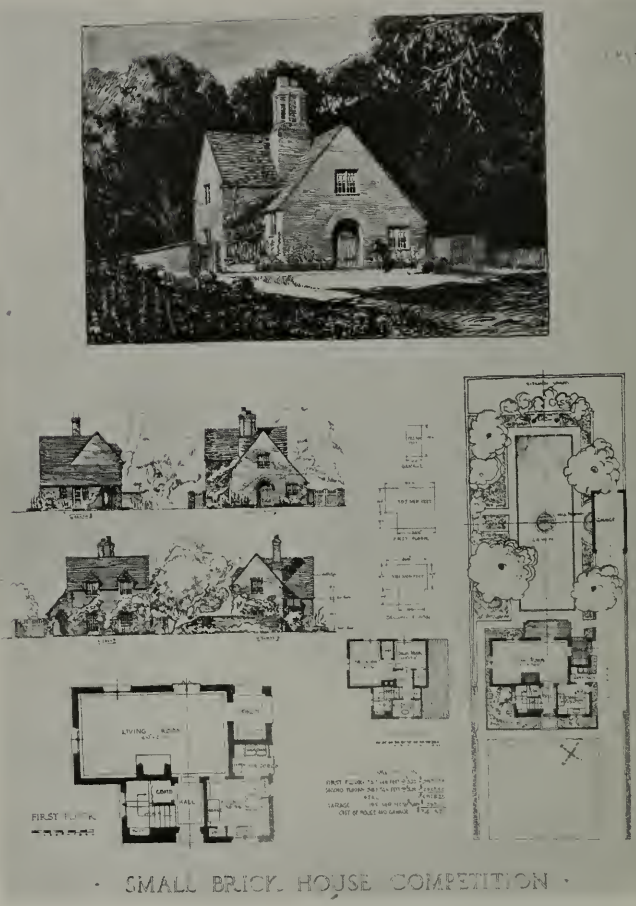
PLANS, HOUSE FOR MR. K. E. PARKER, SAN FRANCISCO
Baumann and Jose, Architect and Engineer

Wind Direction Potent Factor in Laying Out Cities

Washington, D. C., which was laid out in 1789 by Maj. Pierre Charles L'Enfant, is an example of the advantages to be obtained from planning cities with the future well in mind. The city of Springfield, Ill., is about to adopt a city plan, contemplating for the future city, among other features, a union railroad station, an industrial district, the creation of a lake in the valley of the Sangamon river, and a civic center.

The industrial zone is to be located in the extreme northeast part of the city. Attention was given to the source of local water supply, proximity to railroads and terminals, housing conditions, and available sites for industrial plants. An important consideration, however, in choosing this location was the prevailing wind direction. It is always preferable that smoke, gases and noise should blow away from, not over, the residential parts of the city.

The 44-year weather record of the Weather Bureau of the United States Department of Agriculture for Springfield shows that the prevailing wind direction is from the northwest in January and February and from the south during all the other months. It was clearly indicated that by locating the industrial zone in the northeast, smoke-bearing winds would blow over the city but a small part of the time.



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Winning Designs in Brick Home Competition.

ONE of the most successful architectural competitions held on the Pacific Coast in recent years has just been brought to a close. This competition which was conducted under the auspices of the two California chapters of the American Institute of Architects and the California Common Brick Manufacturers Association, was launched primarily to stimulate the interest of home builders in the use of common brick as a medium for practical and architectural beauty in the designing of California homes.

Over one hundred designs were submitted in the competition, which attracted widespread interest throughout California and neighboring states, $1000 in prizes being awarded to the designers of the nine winning exhibits. The first prize of $400 was awarded to Harrison Clark of Los Angeles. The names of the other prize winners follow: second prize, $200, to A. McD. McSweeney; third prize, $100, to F. W. Mullay, and $50 each in the following order to L. Riggs, Santa Barbara, C. W. Lemmon, J. E. Stanton, W. G. Bryne, L. F. Fuller and C. E. Perry, all of Los Angeles.

Special mention was given to A. McD. McSweeney, who was debarred from a fifth prize by the rule that no contestant should receive more than one prize. Special mention was also given to C. R. Perryman, W. K. Graveley, J. A. Lockwood, L. F. Sherwood and J. D. Winn, all of Los Angeles and W. L. Moody, Santa Monica.

So much interest in the results of the competition was evidenced by the building trades and by the building public that arrangements were made immediately following the close of the competition for a public exhibition of all the designs submitted. For two weeks the drawings were on display at the Metropolitan Exhibit in Los Angeles.

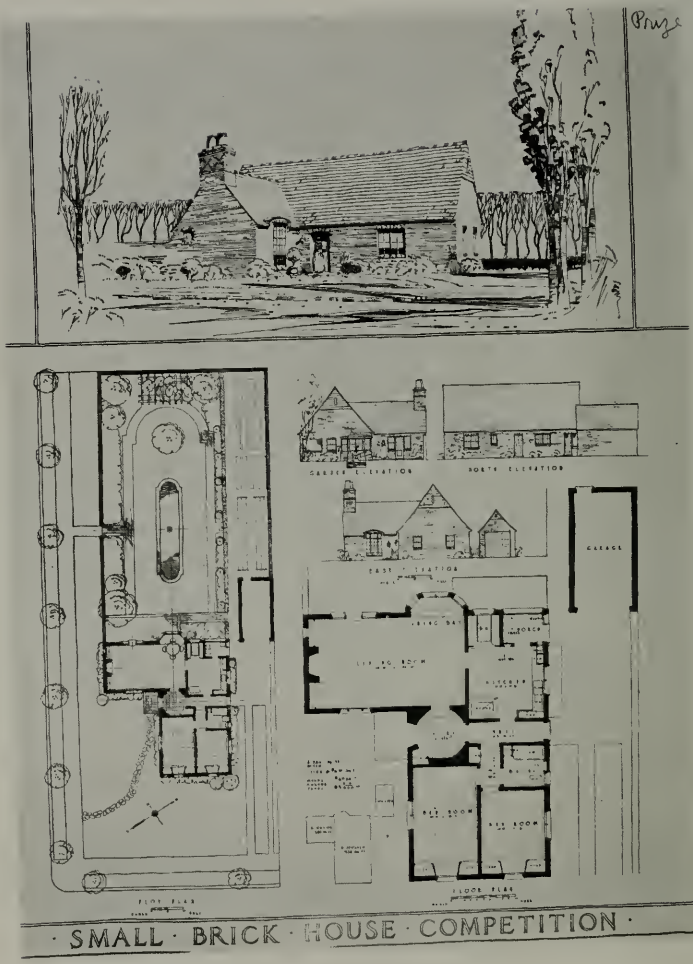
The designs not only show the interesting possibilities of brick in small house construction, but they indicate that the brick house is not necessarily an expensive one. Some of the most beautiful and practicable designs submitted are for houses costing considerably less than $7500.

The competition discloses the latest developments in California small house architecture. The modern tendency in Southern California, based on the experience of recent years, shows an interesting departure from much that has heretofore been standard practice in room arrangement and grouping.

To those contemplating building, the display represents a wealth of suggestions in exterior design and interior arrangement. Plans are now being made to offer a small brick house plan service, using the prize winning designs together with a number of other attractive exhibits submitted in the recent competition. Those interested in securing further details regarding the proposd plan service are requested to write to the secretary of the California Brick Manufacturers Association, 342 Douglas building, Los Angeles.

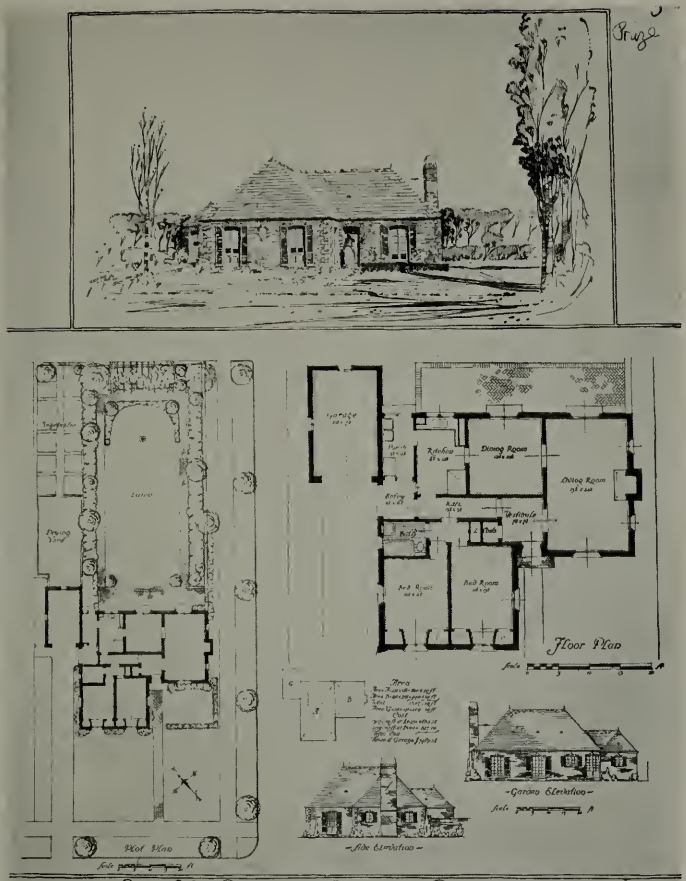
* * * *

For the first time in the history of the brick business in the United States, the manufacturers from the East and Middle West are coming to the Pacific coast for their annual convention. The meeting of the Common Brick Manufacturers' association of America will be held the week beginning February 11th, at Los Angeles.



Awarded Second Prize

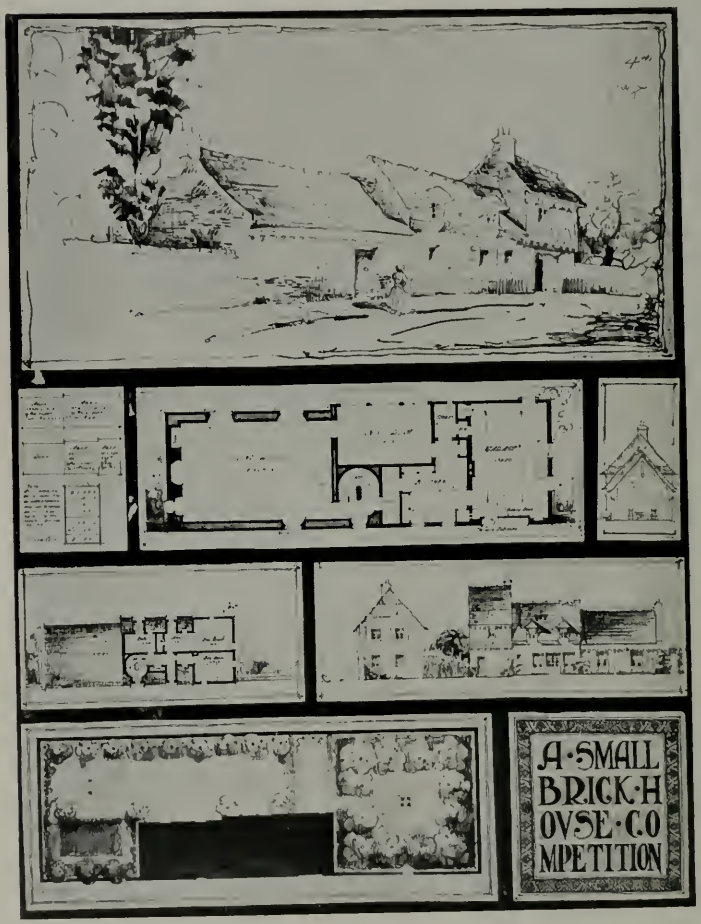
DESIGNED BY A. McD. McSWEENEY
LOS ANGELES, CALIFORNIA



Small Brick House Competition

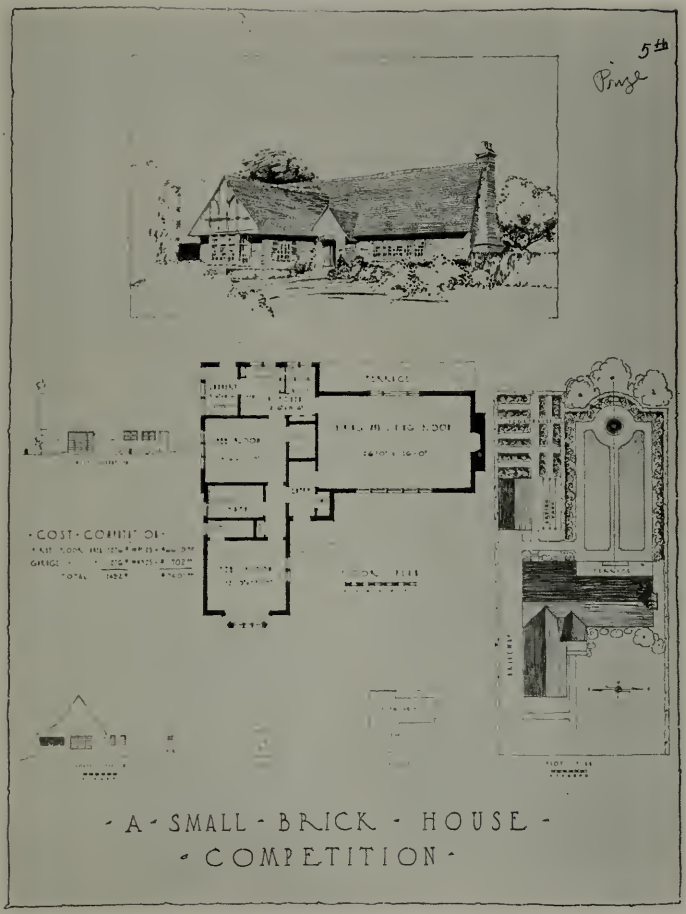
Awarded Third Prize

DESIGNED BY F. W. MULLAY
LOS ANGELES, CALIFORNIA



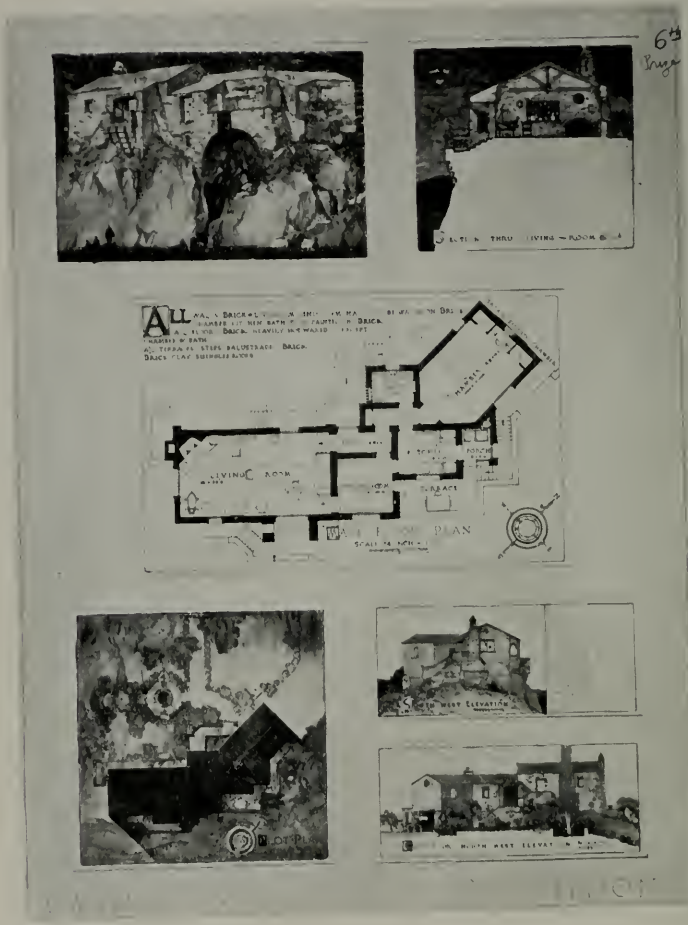
Awarded Fourth Prize

DESIGNED BY L. RIGGS
SANTA BARBARA, CALIF.



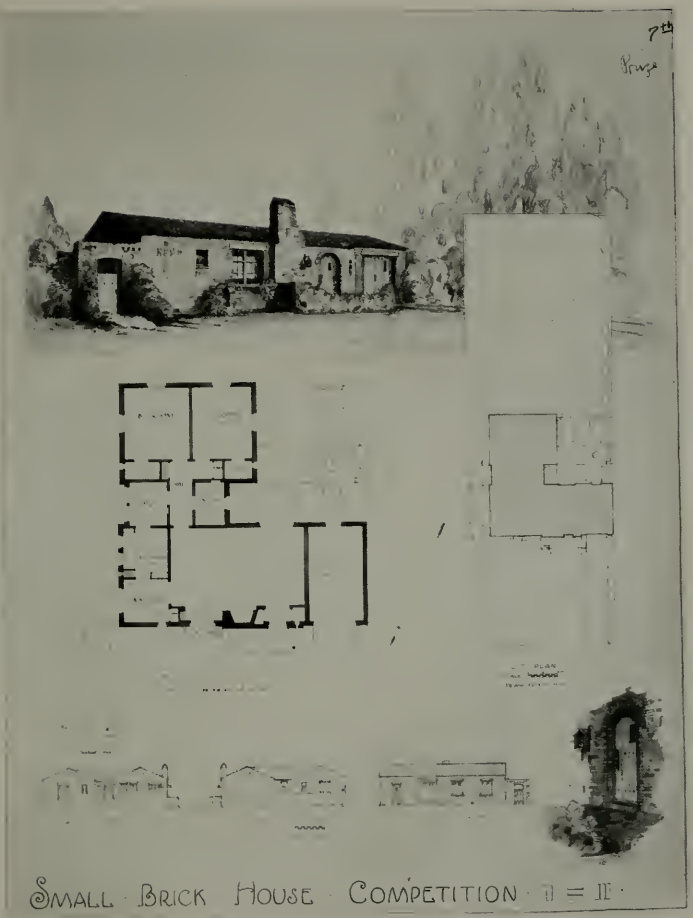
Awarded Fifth Prize

DESIGNED BY C. W. LEMMON
LOS ANGELES, CALIFORNIA



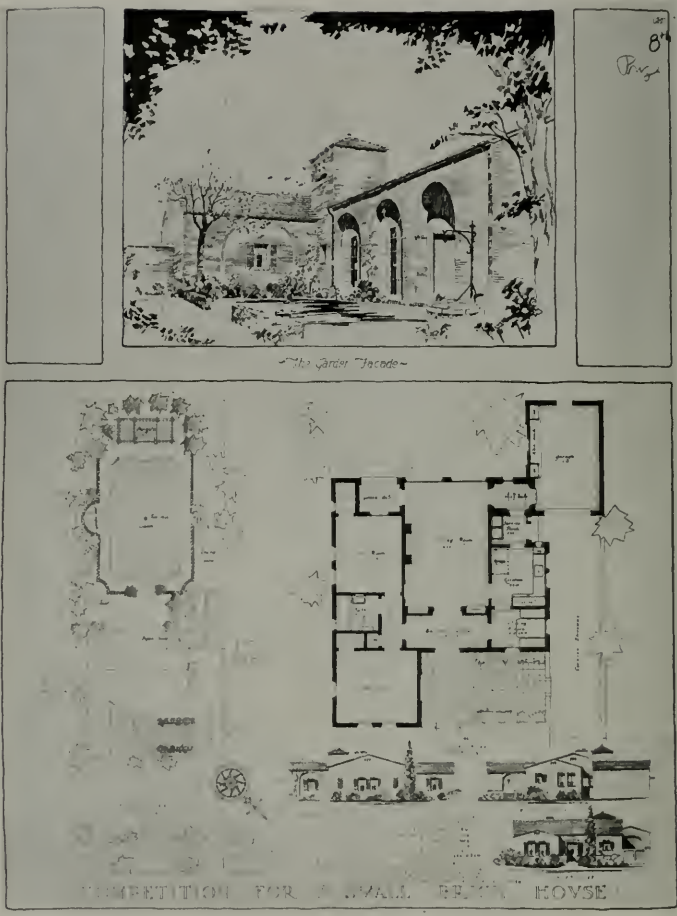
Awarded Sixth Prize

DESIGNED BY J. E. STANTON
LOS ANGELES, CALIFORNIA



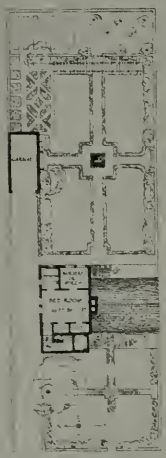
Awarded Seventh Prize

DESIGNED BY W. G. BRYNE
LOS ANGELES, CALIFORNIA



Awarded Eighth Prize

DESIGNED BY L. F. FULLER
LOS ANGELES, CALIFORNIA



COMMON ~ BRICK
SMALL HOUSE COMPETITON

Awarded Ninth Prize

DESIGNED BY C. E. PERRY
LOS ANGELES, CALIFORNIA

MAYO HOTEL, TULSA, OKLAHOMA
GEORGE WINKLER, ARCHITECT

ENTRANCE, APARTMENT HOTEL, WASHINGTON, D. C.
Sonneman & Justment, Architects
F. W. Fitzpatrick, Consulting Architect

A Plea for More Art and Beauty*

By F. W. FITZPATRICK, Consulting Architect

THE eye is virtually the main doorway to the mind and is undoubtedly also one of the most important factors, or instruments, or whatever you want to call them, than can be used in the process of civilizing, educating, bettering the human kind, the genus homo. We have evidences of it every day.

We just naturally crave for pleasant or pretty things to look at, and light is one of them. So with our tenements and the humbler domiciles, the wisest regulation any city can introduce is that which prescribes a reasonable amount of outdoor window surface for light and air into every living or sleeping-room. That regulation has cut down crime and disease amazingly.

Not so many years ago a manufacturer would establish his plant at a convenient point, but that was about all he thought of. Even if the buildings were half-way respectable, the surroundings were sadly neglected. All around those buildings scrap-heaps accumulated, the more unsightly the place became, the dirtier, why, the busier was it supposed to be, the more prosperous its owner. Indeed the so-called hard-headed

*The illustrations are from paintings by the author.

business man would have been ashamed to make a concession to, or expend any money for, what he termed, "silly prettiness." Art and Business couldn't travel together, the latter looked down upon the former as effeminate, an evidence of weakness, something to be scorned. Then came the insurance experts who made at least decency in factories profitable. They offered lowered premiums if those factories were cleaned up a bit and the refuse removed. Not that the insurance companies were doing this in any virtuous or pro bono publico spirit, but simply because it would lessen the danger of fire and their consequent losses. Followed then the pure-food "cranks" who had the authorities step in and insist that in at least certain factories extreme cleanliness must be the rule.

After a while it was noted by the alert business men that in

SURF APARTMENTS, ROCHESTER, N. Y.
John A. Armstrong, Architect; Gordon and Kaebler, Associate Architects

those "reformed" factories the operatives did better work, more of it, and seemed more cheerful. So much so that the keen business men began to put one and one together, and it dawned upon them that cleanliness, much daylight and at least half-way decent surroundings were assets instead of mere expenses, that what had been termed useless extravagance was actually producing a profit. A few pioneers plunged even farther, they made their workshops beautiful, cheerful, convenient for the workers. They actually added frills, rest-rooms, pictures, gardens with real fountains in them and behold, it all produced big returns upon the investment. The workers felt it, they came better dressed, cleaner, brighter in mind and body; more self-respecting and self-reliant, they speeded up the work and evidenced greater loyalty to their employers. Today the man who maintains a slipshod, dirty, unattractive

factory generally has an exceedingly poor investment on hand. Art in Business does pay.

Why, in Cuba they've known that for years, and in the big cigar factories a good reader is employed to read interesting stories to the workers. Their work is the better for it.

A man who puts a fresh coat of paint on his house feels an inch taller when he goes down the street. Take a hobo and wash him up and dress him in natty raiment and he'll act like a gentleman—for a while anyway. When he falls, it will be because he's very far gone in some disease or other and very weak. Isn't drink a disease?

An old school-teacher was telling me some time ago that in the old times when he took a village school where the big bullies had a reputation for man-handling every teacher who had attempted to preside there,

CHICAGO SYNAGOGUE
Newhouse & Bernham, Architects

his first move was to whitewash and clean up that schoolroom, hang up a few chromos, put a couple of cans of flowers in the window, and then invite those bullies to help him keep the flowers watered and a certain daintiness about. He avers he never had any trouble, and his physique was not such as to inspire awe, so he attributes the reform to the power of Art over Matter!

The civic leagues and societies that get after the authorities to compel the cleaning up of cities and who offer prizes and other inducements for well-kept lawns, attractive flower-beds, reformed back yards, and the like, are doing more good work to advance culture, civilization, and Christianity than are the missionaries sent, at infinitely greater cost, into far distant lands.

Perhaps I may be thought to be a bit radical when I say that Art

MOVING PICTURE THEATER, CHICAGO
Newhouse & Bernham, Architects

MASONIC SHRINE TEMPLE
Design and Painting by F. W. Fitzpatrick

should be made more or less compulsory. I mean by Art, Beauty. A little child may and probably will squirm at being bathed. We know that bathing is necessary, therefore it is administered willy-nilly. So in this case, we know that the general public, much as the little child, rebels, just naturally squirms at anything intended for its own good. Here's the point: By years of patient hammering we have gotten our cities to insisting upon buildings being erected a certain way, so they will neither fall down, nor burn up with the old-time alacrity; we've secured the relegation of soap of other smelly factories to regions where they no longer offend us; so with boiler and such noisy shops; we're cutting down the bell-ringing, yelling, and other unnecessary noises in our cities. Our ears and our noses are being fairly protected, albeit it has been hard work, for each step was most bitterly opposed, it was fought for tooth and nail. The broad principle of the greater good of the many even at the cost of the individual is not very well understood here. The average American citizen, proud of his liberty and rights, couldn't get it out of his head that he ought to be able to build where and how he pleased upon his own property and make all the noise he wanted to and be as much of a nuisance as he might elect. His "personal" liberty stuck out all over him porcupine-like. Well, we've done so well for the ears and nose and progressed so far for the safety of the rest of our anatomy that, it seems to me, we ought to give some little thought and attention to the comfort and pleasure of the eye as well.

In many cities they've followed Washington's example and have an Art Commission that passes upon all public work to keep it in harmony with some established plan of artistic development. I'm urging that we go further than that. Our Building Departments carefully examine every plan made for private as well as for public buildings and prescribe just how the walls shall be for strength, how high the building may go, what the sanitary details must be, etc., etc., all in the effort to make our buildings safe and healthful. The people have become used to such control and direction. Why not go a step more? There have been many such steps since the first big fight that was made because the city wanted its sidewalks alike and the same width and level. Theretofore personal liberty was such that you walked on brick, stone, plank, or cinders, all in the same block, and you went up or down steps to the different levels to which the kind-hearted owners of property built their sidewalks in an earnest endeavor to have you break your neck.

The city Art Commissions should have greater power and should co-operate with the Building Departments and pass on all plans for all buildings, private as well as public. Not that I'm clamoring for a certain style of architecture, or that greater expense and elaboration be insisted upon in private buildings, all I want is that our eyes should not be abused, offended, murdered any more than we permit our ears and noses to be. Buildings on any one block should conform to certain major lines, they should not be allowed to scream at each other, there should be a certain harmony of color and material, an effort made toward the really artistic. As it is now, buildings are planted down every one different from the other, a new and sometimes startling creation every twenty-five feet, for all the world as if a confectioner attempted a novel confection by sticking together slices of every imaginable kind, color, shape, and previous condition of cake he could lay hands upon and then wonder at the hodge-podge effect.

Why should we have to look upon buildings that appal us with their utter ugliness? Why should we put all our efforts into one class of

PYLONS MARKING GLEBE ROAD ENTRANCES TO THE PROPERTY
APARTMENTS, STORES ETC. THE MAIN FRONTAGE ON GLEBE ROAD
AN APARTMENT ONE OF THE C UNITS ON PLOT DIAGRAM
SUGGESTIONS FOR THE IMPROVEMENT OF ST PHILIPS GLEBE
POOL AND (ULTIMATELY) FOUNTAIN MARKING CENTRE OF THE RESIDENCE UNITS OF THE GROUP

WORKMEN'S APARTMENTS, SOCIAL CENTER, ETC., SYDNEY, AUSTRALIA
BEUCHAMP CLAMP, ARCHITECT; F. W. FITZPATRICK, CONSULTANT

Carrere and Hastings and Shreve,
Lamb & Blake, Associate Architects

CHICORA COLLEGE, COLUMBIA, S. C.
CHARLES C. WILSON, ARCHITECT

BANK AND OFFICE BUILDING, COLUMBUS, OHIO
RICHARDS, McCARTHY & BULFORD, ARCHITECTS

SAN FRANCISCO
PUBLIC LIBRARY

A FAMILY HOTEL, CHICAGO, ILLINOIS
P. W. FITZPATRICK, CONSULTING ARCHITECT

CATHEDRAL, WHEELING, WEST VIRGINIA
F. F. FARIS, ARCHITECT
F. W. FITZPATRICK, CONSULTANT

FIRST PRESBYTERIAN CHURCH, TULSA, OKLAHOMA
Hawk & Parr, Architects; F. W. Fitzpatrick, Consulting Architect

building? For instance, in Washington there are wondrously fine public buildings, marvels of art, but the private individual is permitted to build any freak construction he wishes and the uglier it is the better it seems to serve his purpose. In consequence there are miles and miles of hideous structures and, in spite of the beautiful government buildings, the city as a whole is irreparably marred, spoiled beyond redemption. Everywhere, in Cleveland as well as Washington, in Chicago as well as in New York, there are misfits, awful efforts at originality, colors that swear at one, "designs" that were conceived in sin and brought forth in terrible travail. In some cities they rule distressingly crippled beggars off the streets; by the same token why must we tolerate advertising signs and such things that literally insult any sense of beauty we may possess?

It's a big field; there's endless work to be done in it. We need to cultivate beauty in our homes, in our schools, on our streets, everywhere in our lives and wherever we are, and we'll be the better for it all. They say cleanliness is next to godliness and, I maintain, beauty is first cousin to cleanliness, nay, I do believe they are twins!

* * * *

Build for Permanence and Beauty.

I would have, then, our ordinary dwelling houses built to last, and built to be lovely; as rich and full of pleasantness as may be within and without, and with differences as might suit and express each man's character and occupation and partly his history.—Ruskin.

MARKET STREET SUBWAY, SAN FRANCISCO
FRANK G. WHITE, CHIEF ENGINEER

The Embarcadero Subway, San Francisco

By FRANK G. WHITE
Chief Engineer for California State Harbor Commission

THE increasing congestion of traffic at the intersection of Market street and the Embarcadero, San Francisco, has been apparent for some time, not only to the Board of State Harbor Commissioners but to city and street railway officials and to the public. The extent of this congestion, however, is probably known to comparatively few. A traffic count made a few months ago showed that between the hours of 7 a. m. and 5 p. m. approximately 8,000 vehicles passed along the Embarcadero across the lower end of Market street. The passing of these vehicles caused an entire cessation of street railway car movement during the eleven hours between 7 a. m. and 6 p. m. of 4 hours and 48 minutes and, of course, there was a corresponding tie-up of vehicular traffic during this same period of 6 hours and 12 minutes. The congestion is materially increased, also, by the passenger travel through the Ferry building amounting to 51,000,000 persons annually or approximately 140,000 per day.

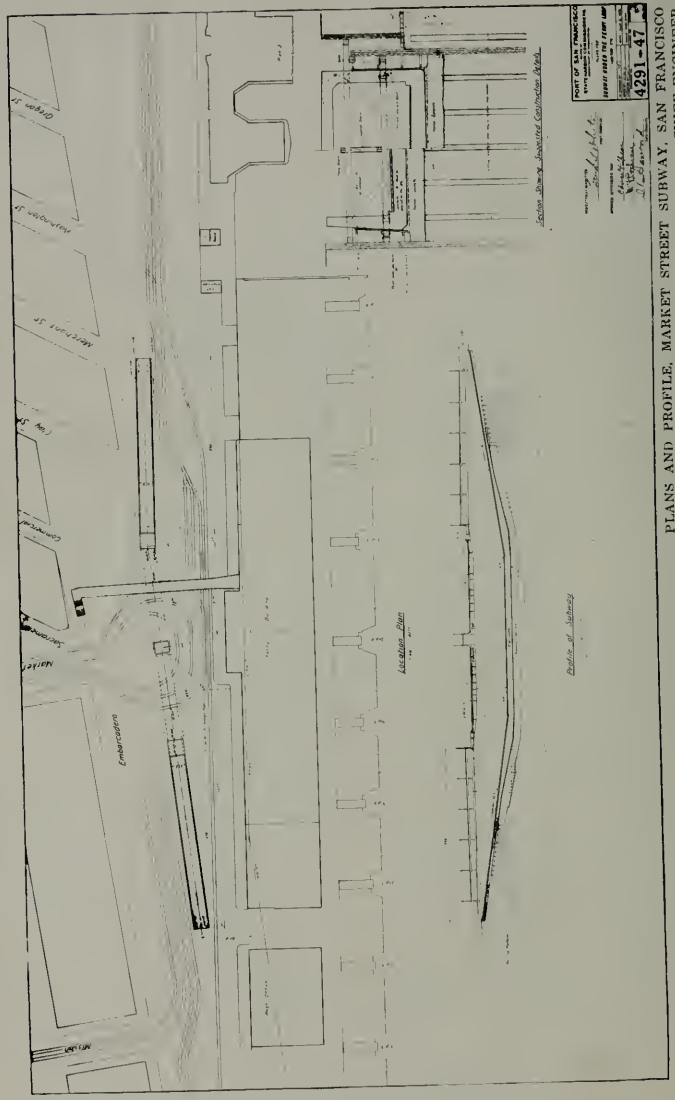
In order to meet this situation the Board is constructing a vehicular subway along the Embarcadero under the street railway loop in front of the Ferry building. This subway will carry the auto traffic, and over it will pass the street railway cars and pedestrians without interference from vehicles.

The total length of the subway is 986 feet, consisting of two open approach sections, each 298 feet in length and one central closed section 390 feet in length. The grade in the approaches is 3.75 per cent. The southerly entrance is located just north of Mission street and the northerly entrance is opposite the foot of Merchant street. At either end the closed section extends 85 feet beyond the nearest street railway loop track, in order to provide a pedestrian way and a passage for automobiles approaching the Ferry building. The width of the subway is 23 feet and the clear height of the closed section is 13 feet. The width is sufficient to accommodate the widest trucks traveling in a single line in each direction; and based on traffic studies, it is believed that this will permit of an increase of 50 per cent over the present traffic.

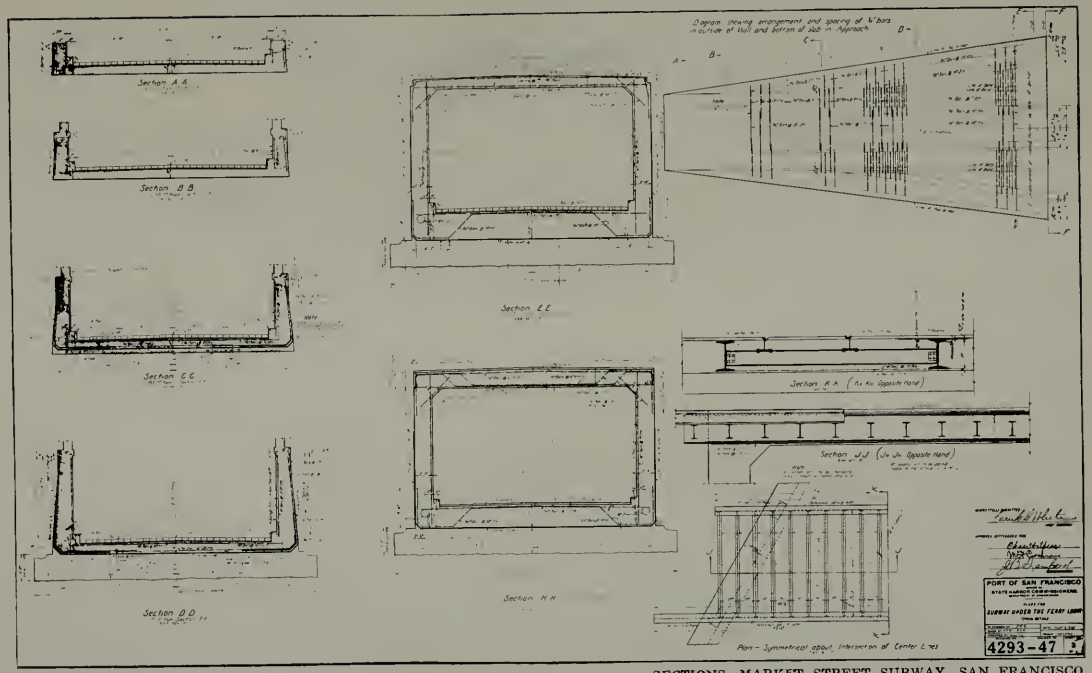
The subway is so located that the westerly side is on the outer slope of an old loose rock seawall. Between this wall and the Ferry building the Embarcadero is carried by a timber platform supported on piles. The platform is 13.5 feet below city base and carries a sand fill upon which the street pavement is laid. These piles were taken advantage of in designing the foundation for the subway and where required, additional piles will be driven. The timber platform ends 280 feet south of the northerly entrance and new piles will be required for supporting this section of the approach.

The subway was designed as a reinforced concrete structure except that the street railway tracks are to be carried in the roof of the closed section on structural steel members. In the typical section the minimum thickness of the roof is 1 foot 10 inches, of the floor 2 feet 5 inches and of the walls 2 feet.

The plans for the construction provide for the removal of the timber platform and the driving of tongue and groove sheet piling to enclose the trench. The piles are then to be cut off at the proper grade, the new piles driven and the bottom sealed in sections by depositing



PLANS AND PROFILE, MARKET STREET SUBWAY, SAN FRANCISCO
FRANK G. WHITE, CHIEF ENGINEER


Section A A
Section B B
Section C C
Section D D
Section E E
Section H H
Diagram showing arrangement and spacing of V bars in outside of shell and bottom of slab in approach
Section K K (Kx Kx Opposite Hand)
Section J J (Jx Jx Opposite Hand)
Plan - Symmetrical about Intersection of Center Lines
PORT OF SAN FRANCISCO
SUBWAY UNDER THE FERRY LOOP
4293-47

SECTIONS, MARKET STREET SUBWAY, SAN FRANCISCO
FRANK G. WHITE, CHIEF ENGINEER

three feet of tremie concrete around the heads of the piles. After this has set the trench is to be unwatered and the laitance removed from the top of the tremie concrete. The outside wall forms are then to be set and the bottom and sides covered with membrane waterproofing. This waterproofing is to be carried continuously across the bottom and up the sides to an elevation above high tide. The permanent bottom, side walls and roof are then to be poured in the dry.

The drainage of the subway will be effected by means of two 8-inch drains cast in the side walls below the level of the floor. These drains will lead to a pump pit located on the south side near the center of the closed section. Thirty drain inlets are provided, the spacing being approximately 40 feet in the closed section and 100 feet in the approaches. In the pump pit will be installed a horizontal centrifugal pump with a 4-inch discharge. The pump will be directly connected to a motor with a switch operated by a float installed in the sump.

The closed section of the subway will be lighted by electricity, the lights being located along both sides in pockets let into the concrete at the junction of the side walls and roof. In addition light will be admitted through an opening 18 by 23 feet located in the center of the loop. This opening as well as the open approach sections will be enclosed by paneled parapet walls.

A general contract for the construction of the subway was awarded on November 1, 1923, to the Tibbitts-Pacific Company for $238,700.00. To this will be added the cost of the cement, pumping installation, lighting and paving, making the total cost approximately $342,000.00. The expense is to be borne jointly by the Board of State Harbor Commissioners, the City of San Francisco and the Market Street Railway Co. on the following basis: Harbor Commission 50 per cent., City of San Francisco 25 per cent, Municipal Railway 12½ per cent, Market Street Railway 12½ per cent. It is expected that the project will be completed in July, 1924.

* * * *

English Women Enter Building Professions.

English women are turning their attention to professional vocations formerly confined exclusively to men. A number of them are engaged in civil, mechanical and electrical engineering, and there are at least a half a dozen firms of women contractors which have carried through the construction of large buildings. Electric lighting, too, as a branch of domestic engineering appeals to many because they have the home maker's point of view, and in consequence are frequently more successful than men in this field. One firm of women electricians makes a specialty of lighting country homes.

* * * *

Wanted—Bamboo Erectors

An American builder visited an interior Chinese city and struck up an acquaintance with a native in the same line. The Chinese builder thought the town ought to put up some skyscrapers, to which the tourist assented.

"Could we get some experts from your country?" was the next inquiry.

"Sure."

"And how should we advertise?"

"Well," replied the American, "if I were you I'd advertise for structural steel workers who understand bamboo."—St. Paul Dispatch.

Right Angle Parking Reduces Cost of Garage Construction.

FREQUENTLY, as consulting garage engineers, the Ramp Building Corporation, is called upon to approve plans for garages in which the cars are shown parked diagonally instead of at right angles.

From a space economy viewpoint, this arrangement is not so efficient as the ordinary method of parking. This statement may be proved by cutting out two rectangular pieces of paper of the same size to represent car spaces and placing them upon another larger piece of paper, one verticle and the other at an angle, but with the lower part of each touching a common baseline. It will be observed that the length of the diagonal car space, measured perpendicular to the base line, is 10 per cent greater than the other. In garage terms, this means that a car 15 feet long when parked diagonally extends into the aisle 1½ feet more than when parked in the usual way.

The effect on the width of the car space is similar. If car spaces are laid out both ways in a given distance, it will be found that more cars can be accommodated when they are arranged at right angles to the aisle. As an example, consider a building 160 feet long. By parking the cars at right angles to the aisle, 22 can be accommodated while with diagonal parking only 19 can be stored.

Another disadvantage of diagonal parking is that the columns cannot be spaced as systematically as when the ordinary system is used. This increases construction cost and makes it more difficult to prove-in the flat slab system.

The advantages urged in favor of this scheme are that it is easier to drive a car in and out of its parking space. Either one of these advantages may be true individually, but they cannot both be true of any one car space. As an example, let us assume that the car spaces are slanted in the direction in which the cars leave. In this case it will certainly be easier for the car to be driven out of its space. However, when the car is to be driven back into the space again, it is necessary first to turn the car around in the aisle.

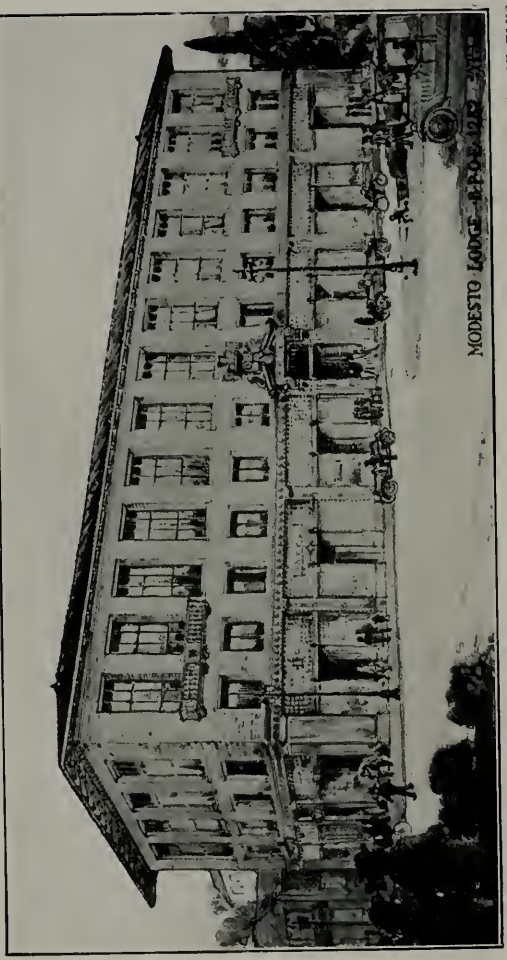
The advantage of a quick exit does not balance the disadvantage of narrow aisles, loss of storage space, the expense of irregular column locations, and the trouble of backing the car into its space.

* * * *

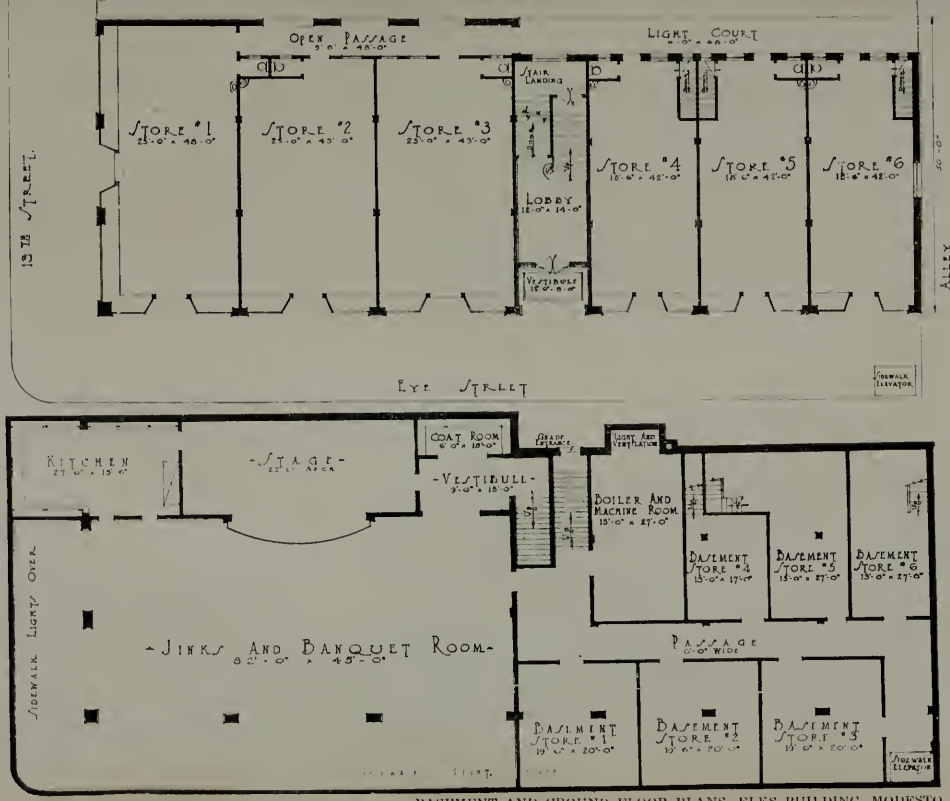
Soap Instead of Oil for Forms

Although no specific tests have been reported recently to show that crude oil prevents bonding of concrete, it is generally recognized that it is impossible to get rid of the thin oily coating after oil has been used on forms in concrete construction work. Anything which cuts down the suction between coats, leads to weak bonding.

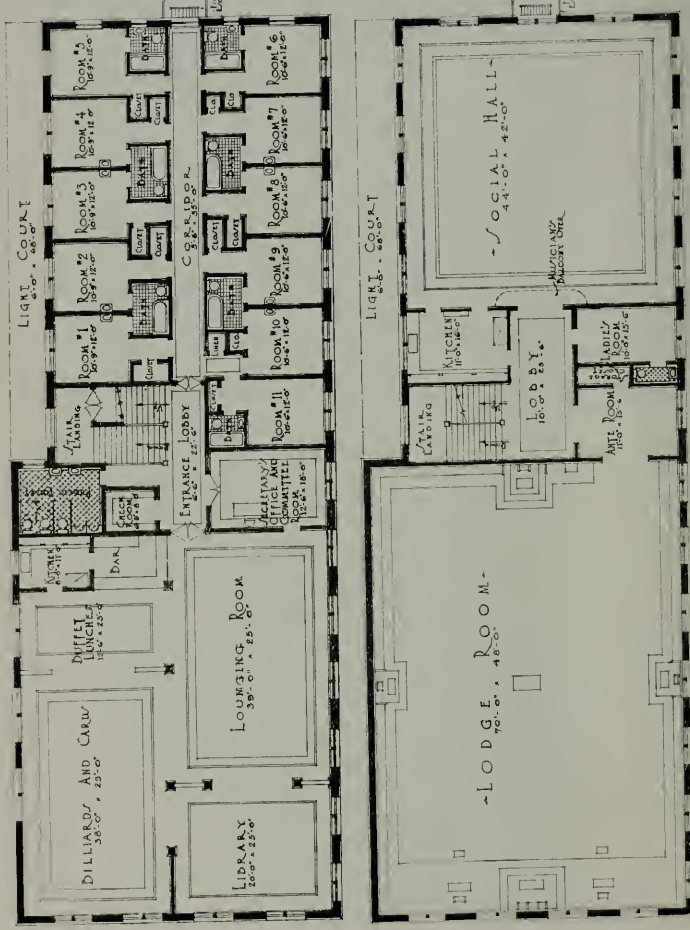
It has been suggested that soap would avoid this condition and a cheap soap thoroughly dissolved in water to a consistency of a very thin paste and applied hot with a whitewash brush or broom would undoubtedly give as good results as oil where it is desired to apply a finishing coat to the surface of the concrete after the removal of the forms. As the soap is soluble in cold water, after the forms are removed, the concrete could be hosed down and would have a better surface for the bonding of plaster.—Concrete.



BUILDING FOR MODESTO LODGE OF ELKS
JAMES H. HOOSE, ARCHITECT



BASEMENT AND GROUND FLOOR PLANS, ELKS BUILDING, MODESTO
JAMES H. HOOSE, ARCHITECT



PLANS, ELKS BUILDING, MODESTO
JAMES H. HOOSE, ARCHITECT

Sizes and Weights of Hollow Building Tile Simplified

AS A RESULT of a general conference of manufacturers, distributers and users of hollow building tile recently held at the Department of Commerce, Washington, under the auspices of the Division of Simplified Practice, it was unanimously agreed that definite weights and sizes of that commodity be considered as the standard of practice for the industry for the current year.

A survey of variety in sizes, dimensions, and weights reported at the preliminary conference of manufacturers held at the department on June 19, showed 36 different sizes, each made in a wide variety of weights. A compilation and review of the figures brought out by this survey was made by the Standard Committee of the Hollow Building Tile Association and was used as a basis for adoption at the general conference.

The discussion opened on the 12x12x12 standard load bearing wall tile for end construction. It was contended that this size did not permit of combined brick and tile construction for the city of Washington. It was brought out by the tile manufacturers that this size would adequately meet the requirements of any construction and that its failure to do so in Washington was due to the fact that builders in that vicinity were not using the standard size brick as adopted at the Brick Conference held at the Department of Commerce on June 21.

A standing committee of the conference consisting of three representatives of manufacturers, three of distributers, and three of consumers, the personnel to be announced later, was decided upon as a means of providing a follow-up to insure the adoption of the simplifications embodied in the recommendation of the conference; to effect a greater degree of contact and co-operation between the department and the industry, and to consider further elminations or substitutions in the existing varieties of tile.

The following list gives in detail the weights, sizes, and types of tile adopted at the conference:

STANDARD LOAD BEARING WALL TILE

End Construction		
3¾ x 12 x 12	3 cells	20 lbs.
6 x 12 x 12	6 cells	30 lbs.
8 x 12 x 12	6 cells	36 lbs.
10 x 12 x 12	6 cells	42 lbs.
12 x 12 x 12	6 cells	48 lbs.
Side Construction		
3¾ x 5 x 12	1 cell	9 lbs.
8 x 5 x 12	2 cells	16 lbs.
8 x 5 x 12 ("L" shaped)		16 lbs.
8 x 6¼ x 12 ("T" shaped)	4 cells	16 lbs.
8 x 7¾ x 12 (square)	6 cells	24 lbs.
8 x 10¼ x 12 ("H" shaped)	7 cells	32 lbs.
Standard Partition Tile		
3 x 12 x 12	3 cells	15 lbs.
4 x 12 x 12	3 cells	16 lbs.
6 x 12 x 12	3 cells	22 lbs.
8 x 12 x 12	4 cells	30 lbs.
10 x 12 x 12	4 cells	36 lbs.
12 x 12 x 12	4 cells	40 lbs.
Standard Split Furring Tile		
2 x 12 x 12		9 lbs.
Standard Book Tile		
3 x 12 x 18 to 24		18 lbs. per sq. ft.

The Safety Factor in Building

THE New York Section of the American Society of Civil Engineers has been considering the subject of structural safety in building. Its study has been limited to building operations of technical character, excluding such simple building work as may be carried out safely by craftsmen without technical direction.

It finds that many practices in the conduct of building are unsound and unsafe, and the fundamental cause lies in the fact that incompetent persons are allowed to build and do build. One of the suggestions offered to offset this defect was the inception of some form of government control which will place it on the owner that he hire the proper architects and engineers and good contractors and building inspectors.

A saving feature of building failures, however, is that they are not chargeable to lack of technical knowledge. The problem of safe building is organizational rather than technical. Ignorance of what good building requires, belief that building codes guarantee safety with ample margin for neglect or variation, dependence upon the city building department, neglect of duty, confusion as to where responsibility lies—or even absence of responsibility for some part of the work—and often plain cupidity—these are reasons. Present conditions of building control make it possible for a man with no knowledge of building to present plans for a building, obtain a permit for erecting it, employ craftsmen, create public dangers subject only to the perhaps not forthcoming objections of the building inspector, and finally put the structure to public use.

The answer is obvious. Building operations of technical character should not be permitted except under the close supervision of a rigidly state licensed structural engineer or architect. No building of any unusual scale should be undertaken without careful planning. It should be technically perfect planning, and not the hit-or-miss variety that merely rough diagrams and important truss.—American Builder.

* * * *

Electricity Replaces Man-Power in India

THE reluctance of the inhabitants of India to adopt anything new has long been the reason that the country has been classed as a backward nation. The change from the old method to the new has been extremely slow in India, due mostly to the natives' tendency to hold to the practices of their forefathers regardless of the merit of the old and the new methods of accomplishing the same results.

Because of the low cost of living and the low standard at which the natives live, labor has been obtainable for an extremely small cost. This fact, too, has mitigated against the adoption of labor-saving devices that are used in other parts of the world. For centuries the hand-pulled punkah has been the instrument that has been used as a fan in India. Illuminating has also been done with antiquated instruments. Cocoanut oil lamps have been the means of securing light at night for hundreds of years.

Despite this conservatism of the people of India, according to Mr. H. A. Doolittle, American consul at Madras, the electric fan and the electric light have shown a marked tendency to replace the punkah and the cocoanut oil lamp. The number of both private and municipal installations in the smaller towns is rapidly growing and a greater interest is being shown in electricity in all areas.—Journal of Electricity.

Proper Heating of Dwellings

THE efficient operation of a home heating plant depends on many factors, including proper construction of the chimney flue, proper installation, a thorough understanding of the plant in order to get a maximum return from the fuel used, tight house construction, a correct degree of humidity, and good ventilation, says the Division of Agricultural Engineering of the United States Department of Agriculture. The problems of construction can be solved only by a skilled builder, while experience is the best teacher as to satisfactory ways of handling the individual home heating plant. The other factors, however, can be controlled with a little careful attention at the start of the winter season.

Cracks around doors and windows and leaky floors waste a great deal of heat in the average house. Under conditions of moderate temperature and wind the resulting air change is not objectionable and does not materially affect the operation of the heating plant. But when snow or rain is driven before a wind of 25 to 60 miles on hour, if window and door cracks permit, the air will change four or five times more rapidly than it should. Many people try to remedy this by shutting off the rooms on the windward side in an effort to force the heat into the other rooms. The only sure cure, however, says the department, is to use storm sash, wood and felt weather stripping or metal stripping, and calking materials to fill in the cracks and to make the house comfortable in all kinds of weather.

* * * *

Anent Imitation Marble

A writer in the New York Times, a great newspaper that prides itself on its conservatism, recently made the rather bold statement that the greater part of the interior marble work to be seen in such profusion in New York hotels, banks and theatres, was made just inside the door "where any passerby, if he were sufficiently interested, could step in and watch the making." Continuing, the article asserts that "none but the expert would know the difference between the manufactured product and the finest marbles from the most renowned quarries of the world."

We can forgive newspaper reporters certain inaccuracies due to the haste with which they are forced to prepare their copy, but when it comes to asserting in cold type that imitation marble cannot be distinguished by even a casual and untrained observer, it is putting it too boldly, and we doubt if there was ever an imitation stone of any kind that could pass detection by anyone. Because of its crude and inarticulate appearance the imitation is always very evident.—Stone.

* * * *

Electric Lamps Bring Wrought Iron Again in Vogue

ONE of the pleasant notes in modern home decoration is given by the revival of the use of wrought iron, and never have utility and beauty gone hand in hand so well. There are wrought iron sconces like the old-fashioned candle ones, for side wall illumination, and some are very much dressed up, and ornamented to a degree which our forefathers would think impossible with wrought iron. The intelligent use of color and proper designing makes them things of beauty.

Then there is the hall lantern. Wrought iron lanterns in quaint patterns, and fitted with tinted glass or parchment, give us the right effect. The "torchier" or pedestal lamp is also useful for hall illumination, and can be had in a range of patterns, the genuine craftsman can produce from forged iron.

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THE RELIGION OF BEAUTY

Elsewhere in this number is printed a thoughtful discussion of the "Religion of Beauty," by Mr. F. W. Fitzpatrick of Chicago. A very forceful appeal is made to the architect and planner to cultivate beauty, not only in one's personal appearance (Our ladies paramount) but in our homes, our schools and on our streets.

The history of the origin and development, growth and decline of beautiful artistic forms constitutes a major portion of the history of civilization. As regards each particular people, the history of their efforts to conceive and express absolute perfection, or what is commonly called Beauty, in form and color, is with the single exception of the history of their speculative opinions, the most reliable test of the stage of progress which they have attained; nor is it an indication of the abundance of their external resources or even of their intellectual activity alone, that the history of the art of a people is thus important. It determines their moral, their religious position, for the inseparable connection between the beautiful and the good is in no way more clearly manifested than in that fact, that the first inroads of demoralization and social disorder are invariably indicated by a diminution in the strength and purity of artistic forms, especially in architecture.

Mr. Fitzpatrick is right in appealing for greater attention to matters artistic, the popularizing of Art, making it an every-day, intimate, and working function.

We've learned that our religion, whatever it be, is not a Sunday dress to be set aside work-days; it's something we must live to, something to be with us constantly and to guide our every thought and act. To our religious beliefs, whatever they may be—and no man is so low as to be without some—let us add (for our own material and spiritual welfare, our selfish interests if you wish) the *RELIGION OF BEAUTY*.

"SAFETY ENGINEERING"

Safety Engineering as a distinct profession does not exist except in the minds of a few theorists. The engineer, through his work, is primarily responsible for the unparalleled progress of the present century in practically every industry. All good engineering practice is safe. Any machine which does not have all the necessary devices to ensure the safety of its operators, is not satisfactory equipment from an engineering standpoint. Of all the terms used by engineers the word "safe" out-

ranks all others in the frequency of its use. It stands for an intrinsic element of good engineering and is an internal quality.

The field of engineering may be considered to be represented by the area within a great circle. Safe engineering applies to all properly designed and operated machines. The periphery of the great circle may be used to represent the contact with human life. On this line we find the problems of human welfare and safety. This is the external phase of good engineering.

Accidents are, in general, the result of human incompetence, either mental or physical. Education and selection of men, having for an object the setting at a task, where hazard is encountered, of qualified men only, could eliminate ninety per cent of preventable accidents. Therefore it appears that the term "safety engineering" really stands for nothing more than that part of human engineering which has for its object the training of men to be careful and competent in hazardous employment.

The Department of Safety of the California Industrial Accident Commission has as its object the rendering of assistance in promoting the observance of safe engineering practice and the adoption of safe conduct on the part of employees, both in precept and in fact. That it is accomplishing splendid results one need only to peruse the commission's annual report which shows a noticable decrease in accidents heretofore attributed to carelessness, or absence of proper safety devices.

"AMERICAN PLAN" FOR ANOTHER YEAR

The wage scale which has been in effect on all work operated under the "American Plan" in San Francisco during the past year will continue in effect this year. The only changes are an increase of 65c a day in wages of elevator constructors and 50c a day in wages of teamsters and truck drivers. In making this announcement, the central council of the San Francisco Builders' Exchange declares no occasion has arisen for revision of the wage scale, which, it will be recalled, was fixed by the impartial wage board after a careful investigation of living costs and a study of the various trades, and is regarded as an equitable adjustment, taking into account living conditions and the average skill required in the different crafts. In the resolutions adopted by the Central Council continuing the wage scale through 1924, it is declared that "while this is the standard wage scale for general average skill in the building crafts, variations shall be allowed in individual cases based on those mechanics who possess greatly superior skill, such additional compensation being warranted by the superiority of the output." There is no question but that opportunities for both labor and capital in San Francisco have been materially improved under the "American Plan."

THE FIRE HAZARD IN OUR DEPARTMENT STORES

The country may well give thanks that the Christmas season has passed without a holocaust in one of our big department stores!

Our fire-prevention "cranks" have done all they could to have conditions bettered in these stores, made a little less ripe for a terrific disaster, but with slight effect. We Americans learn only by sad experiences and awful lessons, at least in the matter of Fire and then only insofar as some one particular detail is most forcefully brought to our attention.

It took the destruction of goodly parts of Baltimore, of San Francisco and of Toronto before we really could make a dent in our city councils to adopt worth while general building regulations. The great

Iroquois theatre fire in Chicago forced attention to theatres and, for a while at least, anywhere and everywhere we easily had sane restrictions in regard to theater-building—but nothing else. Then the Collingwood school burned and hundreds of little children were destroyed and attention was centered on schools, so that now they are fairly safely built and protected. But we have not yet had a great fire in a department store, so, of course, it is the dickens own job to get those stores into proper shape against fire and panic.

Imagine the setting and then be convinced that it is only through some extraordinarily lucky chance we have escaped such a catastrophe. Narrow aisles, counters piled high with inflammable goods, great open courts through five and more stories of a store, so that five minutes after a fire started on the main floor the whole structure would be aflame. Stairs and elevators poorly indicated, a surging mob seeking egress and if it does get to the ground story it will mill around and around to find the exits and those are probably whirligig store doors! Imagine it, I say. Why, at a low estimation a couple of thousand people could be burned or crushed to death in a few minutes. There would be sob editorials, investigations, great memorials mayhap in honor of the dead, indignation at owners of store and authorities for permitting such conditions to exist. But of what avail? Those people will stay dead. A rather heavy price to pay for a lesson. Oh, of course, after it, we could secure almost any regulation we ask for those stores. But why wait? It didn't happen this Christmas time. Who will guarantee it will not next year? Why not a little prevention instead of sorrow and regret and much scurrying to remedy conditions "after the fact?"

F. W. F.

THE QUESTION DRAWER

Edited by
JOHN GRACE

Editor The Architect and Engineer,
San Francisco.

I am trying to find the reason why when the cold water self-closing faucet of a wash basin closes there immediately is a "knock" in the pipe. I am referring to the plumbing installation in a hotel or apartment house.

I have read The Architect and Engineer for many years and am under the impression that an article once appeared in your magazine with an explanntion and a simple remedy to correct this trouble for varying pressures.

Will you kindly advise me where to look further on this subject.

Yours faithfully,
J. M. McLUCKIE.

Vancouver, B. C., Dec. 1, 1923.

This knock is generally caused by air in the pipe. There should be an air chamber at least 16 inches long behind each outlet. If the water pipes run to the top of the building and drop down, the knocking can be stopped by placing a large air chamber in the attic to act as a cushion. The airchamber should be at least one size larger than the water pipe itself.

Painting a Skyscraper

Editor The Architect and Engineer,
San Francisco.

Can you inform me what is being done to the Claus Spreckels building at Market and Third streets? Is the stonework being painted, and if so, why?

INQUISITIVE.

The Claus Spreckels building at Market and Third streets, San Francisco, is being treated to several coats of lead and oil for the purpose of preserving the face stone which has commenced to show evidence of disintegration, due to atmospheric conditions. Experts say that the sulphuric fumes and chemical acids from fuel oil and automobile gas exhausts, have a penetrating effect on certain kinds of building material. The salt air peculiar to San Francisco's climate, coming in contact with these acids and fumes, causes a disintegration of the stone, making it necessary to protect the outer surface with some sort of preservative. The applications being given to the exterior of the Claus Spreckels building consist of a first coat of Kellogg's raw oil, a second coat—40 per cent. sublimed lead, 10 per cent. lead carbonate, 30 per cent. cilica, and 30 per cent. pure French zinc oxide ground in raw oil, and finally a third coat, consisting of 30 per cent. lead carbonate, 40 per cent. sublimed lead, and 30 per cent. French zinc oxide ground in raw oil.

LOS ANGELES BUILDING FORECAST FOR 1924

FOLLOWING is a summary of building projects involving more than $250,000 comprising work expected to start during 1924 in Los Angeles and other Southern California cities. Where no other city is mentioned, all locations and addresses are in the city of Los Angeles.

STORE AND OFFICE BUILDING, 12 stories and basement, 86x160 ft., s. e. cor. Ninth and Olive Sts.; Sun Realty Co., owner; Curlett & Beelman, Union Bank Bldg., architects; Macdonald & Kahn, 603 Loew State Bldg., contractors. $850,000

BANK AND OFFICE BUILDING, 12 stories and basement, class A, steel frame, 75x150 ft.; First St. and Pine Ave., Long Beach; Security Trust & Savings Bank, owners; Curlett & Beelman, Union Bank Bldg., architects; plans being prepared. $1,000,000

BANK AND OFFICE BUILDING, 13 stories and basement, class A reinforced concrete, 60x140 ft., 300 offices; Hollywood Blvd. and McCadden Pl.; Commercial Bldg. Co., owners; Federal Trust & Savings Bank, lessee; Wm. Simpson Construction Co., 315 Bank of Italy Bldg., contractors; plans being prepared. $750,000

STORE AND OFFICE BUILDING, 14 stories and basement, class A steel frame, 145x159 ft., 350 offices (City Club building); s. e. cor. Ninth and Hill Sts.; syndicate personnel not disclosed, owners; J. C. Austin and Lymann Farwell, associated architects, preliminary plans made; Birch O'Neal Co., contractors. $1,250,000

BANK AND OFFICE BUILDING, 12 stories and basement, class A steel frame, 104x119 ft., 600 offices; n. e. cor. Seventh and Spring Sts.; syndicate represented by Joe Toplitzky, owners; Hellman Commercial Trust & Savings Bank, lessee; Schultze & Weaver, Pacific Mutual Bldg., architects; Scofield Engineering Construction Co., Pacific Finance Bldg., contractors; excavation started. $1,200,000

BANK AND OFFICE BUILDING, 12 stories and basement, class A steel frame, 57x150 ft.; s. e. cor. Hollywood Blvd. and Cherokee Ave.; Hellman Com'l Trust & Savings Bank, owner; Schultze & Weaver, Pacific Mutual Bldg., architects; plans being prepared. $650,000

STORE AND OFFICE BUILDING, 12 stories and basement, class A reinforced concrete, 73x110 ft., 220 offices; s. e. cor. Eleventh and Broadway, Citizens Mortgage Co., owners; Noerenberg & Johnson, 401 Los Angeles Ry. Bldg., architects, commissioned to prepare plans. $650,000

STORE AND OFFICE BUILDING, class A steel frame construction, 12 stories and basement, 100x200 ft., San Diego; owner's name withheld; John Parkinson and Donald B. Parkinson, architects; plans being prepared. $1,500,000

BANK AND OFFICE BUILDING, 12 stories and basement, class A steel frame, 74x150 ft.; n. e. cor. Hollywood Blvd. and Ivar Ave.; Guaranty Building & Loan Assn., owners; J. C. Austin and F. M. Ashley, 1125 Detwiler Bldg., architects; Wm. Simpson Constr. Co., Bank of Italy Bldg., contractors; foundation started; permit issued $800,000

STORE AND OFFICE BUILDING, 12 stories and basement, 81x150 ft., class A steel frame; n. e. cor. Fifth and Broadway; Chester Williams, owner; Sun Drug Co., lessee; Curlett & Beelman, Union Bank Bldg., architects; plans being prepared. $1,500,000

BANK AND OFFICE BUILDING, 12 stories and basement, class A, steel frame or reinforced concrete, 45x125 ft., n. e. cor. Main and Commercial Sts.; Pacific Southwest Trust & Savings Bank, owners; Dodd & Richards, 905 Brack Shops Bldg., architects; plans being prepared. $350,000

STORE AN DOFFICE BUILDING, 13 stories, steel frame, 57x135 ft., s. e. cor. Spring and Seventh Sts.; Cahn-McCabe Co., owners (Financial Center Bldg.); S. Tilden Norton and F. H. Wallis, 716 S. Spring St., architects; foundation started; general contract not let; permit issued $500,000

BANK AND OFFICE BUILDING, 12 stories and basement, class A steel frame, 60x160 ft., Spring St. near Sixth St.; Pacific Southwest Trust & Savings Bank, owner; John Parkinson and Donald B. Parkinson, architects; plans being prepared. $800,000

STORE AND OFFICE BUILDING, 12 stories and basement, reinforced concrete construction; Builders Exchange Bldg.; Van Nuys Investment Co., owner; Morgan, Walls & Clements, architects. $750,000

TELEPHONE BUILDING, 4 stories and basement (designed for height limit), class A reinforced concrete, 90x150 ft.; s. e. cor. Washington St. and Grand Ave.; Southern California Telephone Co., owner; plans will be prepared by company's engineers at San Francisco; work will be started during 1924. $1,300,000

MERCANTILE BUILDING, 12 stories and basement, class A steel frame, 190x165 ft.; Flower St. between Seventh and Eighth Sts.; Meyer Siegel Co., owners; Curlett & Beelman, Union Bank Bldg., architects; plans being prepared. $2,000,000

MERCANTILE BUILDING, 5 stories and basement, class A steel frame, 62x154 ft. (Desmond's store), e. side Broadway s. of Seventh St.; Columbia Investment Co., owners; A. C. Martin, 228 Higgins Bldg., architect; bids being taken. $500,000

NEWSPAPER BUILDING, 3 stories and basement, class A reinforced concrete, 100 ft. on Trenton St., 200 ft. on Georgia St. and 282 ft. deep; Evening Herald, owner; Morgan, Walls & Clements, Van Nuys Bldg., architects; plans prepared.

STUDIO BUILDING, 12 stories and basement, class A steel frame, 60x145 ft., Hollywood Blvd. nr. Cherokee; Platt Music Co., owner; Schultze & Weaver, Pacific Mutual Bldg., architects. $600,000

MARKET BUILDING, 3 stories and basement, class A reinforced concrete, 150x140 ft., southwest corner Seventh and Union; Young's Market Co., owner; Chas. F. Plummer, Story Bldg., architect; Weymouth Crowell Co., 2026 W. Ninth St., contractor; work just started; permit issued. $400,000

LOFT BUILDING, 12 stories and basement, class A reinforced concrete, 51x150 ft.; east side Broadway between Eighth and Ninth Sts.; Wurlitzer Co., owner; Walker & Eisen, Pacific Finance Bldg., architects; bids taken. $500,000

STORE AND LOFT BUILDING, 11 stories and basement, class A reinforced concrete, 100x150 ft., west side Broadway between Ninth and Tenth Sts.; A. C. Blumenthal and associates, owners; Kenneth Macdonald & Co., Brack Shops Bldg., architects; Macdonald & Kahn, Loew State Bldg., contractors; site being cleared. $650,000

ADDITION TO BULLOCK'S STORE, 12 stories and basement, class A steel frame, 37x145 ft.; Hill St. near Seventh; John Parkinson and Donald Parkinson, architects; plans being prepared. $250,000

LOFT BUILDING, 10 stories and basement, Grand Ave., near Sixth St.; T. E. Kaufman, owner; Walker & Eisen, Pacific Finance Bldg., architects; plans being prepared. $600,000

LOFT BUILDING, 13 stories and basement, class A reinforced concrete, 50x90 ft., northeast corner Seventh and Los Angeles Sts.; S. Goodman, owner; Walker & Eisen, Pacific Finance Bldg., architects; plans being prepared. $300,000

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LOFT BUILDING, 9 stories, 150 ft. high, 120x200 ft., reinforced concrete and steel frame; Olive St. between 4th and 5th Sts.; Southern California Telephone Co., owner; plans being prepared by engineering department, San Francisco. $800,000

APARTMENT BUILDING, 7 stories, class A reinforced concrete, 88 apartments (Las Moradas); Rossmore and Rosewood Aves.; Park W. Cowan, owner; J. C. Austin and F. M. Ashley, Detwiler Bldg., architects; plans being prepared. $750,000

APARTMENT BUILDING, 12 stories, class A reinforced concrete, 150x150 ft., 539 rooms; Third St. and Cedar Ave., Long Beach; Chas. H. and Fred Stillwell, owners; Russell & Alpaugh, Story Bldg., architects; Vaughn Construction Co., Chapman Bldg., general contractors; excavation started. $1,450,000

HOTEL BUILDING, 13 stories, class A steel frame, 1600 rooms, Seventh and Bixel Sts., extending through to Eighth St.; syndicate represented by Joe Toplitzky, owners; Schultz & Weaver, Pacific Mutual Bldg., architects; plans being prepared; work to be started next April. $5,000,000

APARTMENT BUILDING, 12 stories and basement, class A steel frame, 500 rooms; Grand Ave. between Fifth and Sixth Sts. (annex to Biltmore hotel); Central Investment Co., owners; Schultze & Weaver, Pacific Mutual Bldg., architects; plans being prepared. $3,000,000

APARTMENT BUILDING, 12 stories and basement, class A reinforced concrete, 115x119 ft.; Hollywood Blvd. and La Brea Ave.; A. C. Blumenthal and associates, owners; Kenneth Macdonald, 1305 Brack Shops Bldg., architect; plans being prepared. $1,500,000

APARTMENT BUILDING, 13 stories and basement, class A reinforced concrete, 150x100 ft, 300 rooms, n. e. cor. Wilshire Blvd. and Ardmore Ave.; Ruth Roland, owner; Walker & Eisen Pacific Finance Bldg., architects; plans being prepared. $800,000

APARTMENT BUILDING, 5 stories and basement, class A reinforced concrete, 226x150 ft. (The Seville), s. w. cor. Fourth St. and Normandie Ave.; Edw. W. Zaiser, Frank W. Killen and J. T. Condon, owners; Walker & Eisen, Pacific Finance Bldg., architects; plans being prepared. $800,000

APARTMENT BUILDING, 12 stories and 14 stories, 84x121 ft., 300 rooms (San Marcos); Ocean Ave. near Cedar Way, extending through to Seaside Blvd., Long Beach; Walter Horne Co., P. E. Keiler and Ross Abdull, owners; Walker & Eisen, Pacific Finance Bldg., architects, H. L. Gogerty, associated; plans being prepared. $800,000

HOTEL BUILDING, 9 stories and basement, class A reinforced concrete, 95x139 ft., 325 rooms; s. w. cor. Fifth and San Pedro Sts.; E. N. Adam owner; Russell & Alpaugh, 1106 Story Bldg., architects; H. T. Johnson Co., 304 Bradbury Bldg., contractors; plans being prepared. $650,000

HOTEL BUILDING, 14 stories, class A reinforced concrete, 92x147 ft., 620 rooms; 636-44 S. Main St.; Metropolitan Hotel Corp. (W. W. Paden and associates), owners; Loy L. Smith, 218-22 Byrne Bldg., architects; bids taken. $800,000

HOTEL BUILDING, 12 stories, class A reinforced concrete, 60x125 ft., 252 rooms; Bixel and Ingraham Sts.; Mrs. H. Foote and J. Foote, owners; L. L. Jones, 603 Grosse Bldg., architects; bids being taken. $800,000

APARTMENT BUILDING, 7 stories, class A reinforced concrete, Hermosa Beach; F. S. Vreelan, owner; Myron Hunt, architect; plans being prepared. $350,000

ADDITION TO HAYWARD HOTEL, Sixth and Spring Sts., H. C. Fryman, owner; John Parkinson and Donald B. Parkinson, architects. $400,000

(Concluded on Page 122)

With the Architects

Building Reports and Personal Mention of Interest to the Profession

Chapter Elects Officers

Architect Reginald D. Johnson was elected president of the Southern California Chapter of the American Institute of Architects at the December meeting. Other officers elected are: vice-president, A. M. Edelman; secretary, David J. Witmer; treasurer, A. C. Zimmerman; member board of directors, D. C. Allison. The new officers were installed at the January meeting by the retiring president, Sumner P. Hunt.

For delegates to the annual national convention of the Institute, the following members were elected: Messrs. A. M. Edelman, Myron Hunt, Sumner P. Hunt, D. C. Allison, J. E. Stanton, John Parkinson, C. E. Noerenberg and Carleton M. Winslow. It is anticipated that the Chapter will be entitled to ten delegates, the president and secretary being ex-officio members of the delegation.

On recommendation of the committee on education, it was decided to hold an architectural exhibition this year. In order to curtail the quantity of material to be displayed, the exhibition will be confined to residential work and to the work receiving the medal awards for the most architectural merit. Each member of the Chapter will be restricted to the proper presentation of two residential subjects. In making the medal awards, the work of any licensed architect will be eligible for consideration.

Urges Municipal Commission

At the last monthly meeting of the Washington Chapter of the American Institute of Architects, Seattle, an address was given by Architect David J. Meyers in which he emphasized the need of a city planning commission. His talk was in line with the efforts of the organization to bring before the public the necessity of scientific and artistic planning for the growth of the city. He gave an account of other cities, showing what work is being done along this line.

Richmond Apartments

A four-story frame and stucco apartment house has been designed for Richmond by Architect E. H. Hildebrand, 110 Sutter street, San Francisco. Bids have been taken and contracts will be let shortly, amounting to approximately $60,000.

Architects Donate Services

The offer of the Allied Architects' Association of Los Angeles to develop, through co-operation with municipal departments and other agencies, a comprehensive and harmonious plan for the administrative center, which will fix the arrangement of the streets, parkings, sidewalks and grades thereof, the locations for the various civic buildings proposed and the treatment of the entire area of land set aside for the purpose, has been accepted by the special committee representing the Los Angeles City Council, the County Board of Supervisors and the Community Development Association.

Messrs. Charles H. Cheney, F. L. Olmstead and Harland Bartholomew will cooperate with the city, the county and the architects, free of cost to the city and county, in working out the plans.

State Architectural Board Vacancies

Terms of thirty-nine Stephens appointees to various state boards and commissions have expired and their successors will be named in the immediate future by Governor Richardson, according to word from Sacramento.

Included in the list of state appointive officers, the following expirations are shown: Northern Board of Architecture, terms of all members (five) expired; Southern Board of Architecture, terms of all members (five) expired; Land Settlement Board, attorney general holds that four members are in office under invalid commissions.

Death of Herman Barth

The death of Architect Herman Barth with offices in the Phelan building, San Francisco, occurred December 11th at the Franklin hospital, San Francisco. Mr. Barth was in an automobile accident the day previous to his death but at that time it was not thought that his injuries were serious. He was 58 years of age and had practiced architecture in San Francisco for more than 25 years. One of his best designs is the southern wing of the San Francisco City and County hospital. Mr. Barth was a member of the San Francisco Chapter, A. I. A.

British Columbia Architects

Mr. S. M. Eveleigh, who has already served for one year as president of the Architectural Institute of British Columbia, was re-elected at a recent meeting in Vancouver, B.C.

Comparatively few changes in the personnel of the council of the Institute were made at the annual session. Prof. E. G. Matheson, of the University of British Columbia faculty, who is the provincial government appointee on the council, tendered his resignation owing to the increasing demands on his time made by university duties. Mr. A. L. Mercer, the first president of the Institute, who has served on the council for the past year, also resigned, but was elected to the post of honorary treasurer.

In place of the latter the Institute elected Architect James A. Benzie, while Prof. Matheson's place is to be filled later by a government appointee in compliance with the provisions of the Institute's act of incorporation. Architect F. L. Townley who has filled the post of registrar ever since the incorporation of the Institute, was again returned unopposed. The council now consists of the president and Architects G. L. T. Sharp and Jas. A. Benzie, of Vancouver; J. C. M. Keith of Victoria, and one to be named later by the government.

Bank Building

The H. H. Winner Company, Sharon building, San Francisco, has completed plans for a $50,000 one-story reinforced concrete bank building for the Bank of Sausalito. Mr. Winner's office is also turning out plans for the new Sonoma County National Bank building at Petaluma to cost $150,000, and for alterations to the First National Bank at Ventura.

Architect Gutterson Busy

New work in the office of Architect Henry H. Gutterson, 526 Powell street, San Francisco, includes a $10,000 residence for Colonel C. H. McNeil to be built in the burned district, Berkeley; two, $15,000 dwellings in St. Francis Wood, for the Garden Homes Company, and a $22,000 house for the same owners on San Buena Ventura avenue, San Francisco.

Oakland Bakery and Garage

Plans have been prepared by Architects Meyer and Johnson for a one-story bakery and garage to be erected at 22nd and Myrtle streets, Oakland, for the Rose Baking Company.

Zoning Ordinance Unconstitutional

Los Angeles zoning ordinances which seek to prohibit erection of certain types of structures in certain parts of the city were declared unconstitutional in a decision handed down by the second district court of appeals.

Only in cases where the public health, safety or welfare is concerned can the city exercise arbitrary police powers, the decision stated. Where these are not concerned the individual should be given the "unrestricted right to use and enjoy" his property, the court held, adding that inasmuch as zoning ordinances are primarily intended to further the esthetic appearance of the city they can not be regarded as necessary to the public health, safety or welfare.

The decision was handed down in the case of George Lee Miller and Frances Miller, who appealed from a decision by the superior court denying their application for a writ of mandate to compel the board of public works to grant them permission for construction of a four-story flat in a district restricted by zoning ordinances to two-family structures.

Two Apartment Houses

Plans have been completed by Architects Baumann & Jose, 251 Kearny street, San Francisco, for two three-story frame and stucco apartment houses to be built on the west side of Van Ness avenue, between Chestnut and Francisco streets, San Francisco, for Mr. Axel Johnson. They will cost $50,000 each. The same architects have made plans for a $45,000 apartment house for Mr. Wm. Hoffman to be built on the south side of Chestnut street, west of Van Ness avenue, San Francisco.

Branch Bank Building

Plans have been completed by Architects Bakewell and Brown, 251 Kearny street, San Francisco, for a one-story and mezzanine reinforced concrete and terra cotta branch bank building at 22nd and Valencia streets, San Francisco, for the Hibernia Savings & Loan Society. One structure will cost $100,000.

Personal

Architects H. G. Corwin and E. H. Merrill have dissolved partnership. Mr. Merrill will continue the practice of his profession at 3981 W. 6th street, while Mr. Corwin has opened a new office at 129 W. Washington street, Los Angeles.

Architect Henry H. Gutterson announces the removal of his office from 278 Post street, to 526 Powell street, San Francisco.

The Advent of the Skyscraper

The late 19th century withnessed the advent of the skyscraper, and from year to year the number of towering structures in American cities has been growing steadily. At the present time several new buildings, which will become landmarks in their cities, are in various stages of construction.

The 32-story Shelton hotel in New York, the tallest building in the world used for human habitation, has just been completed. In Detroit the 29-story Book-Cadillac, the tallest transient hotel in the world, is being built. In Chicago the new 32-story Straus building is probably the most notable recent addition to America's great office buildings from the standpoint of utility, beauty and income production.

Other notable skyscrapers recently built or now in the course of construction, are the Standard Oil building of New York, rising to a height of 511 feet, and the Chicago Temple building in Chicago, which, with its slender spire, will reach a height of 556 feet.

The Chicago Tribune tower building, one of the most distinctively architectural structures in the country, will be, with its tower, 400 feet high.

One prominent American architect made the statement that with a base of sufficient proportions, he would not hesitate to undertake the erection of a building 2,000 feet high.

Studio Building

A four-story and basement Class B store and studio building is being designed by Architect Edward E. Young for Messrs. Perkins and Trowbridge. It will be erected on the southwest corner of Market and Ninth streets, San Francisco, at an estimated cost of $200,000.

Packing Plant

Mr. Phillip Bush, engineer for the California Packing Corporation, 101 California street, San Francisco, is preparing plans for a large packing house to be built on the block bounded by B, C, 16th and 18th streets, Sacramento, at an estimated cost of $800,000.

Department Store Building

Plans are being prepared by Architect James T. Narbett of Richmond for a three-story concrete and brick department store building to be erected at Ninth street and MacDonald avenue, Richmond, for Albert's, of San Rafael.

Eighth Avenue Residence

Architect Walter Falch has prepared plans for a $12,000 residence at Eighth avenue and Lawton street, San Francisco, for Mr. Walter Schaefer.

Annual Meeting of Architect's Society

Architect Harry H. James of Seattle, was chosen successor to Julius Sittel as president of the Washington State Society of Architects, at the eighth annual meeting, held December 6 at the Northold Inn, Seattle. The other officers elected are: first vice-president, Wm. J. Jones, Seattle; second vice-president, Edgar Blair; third vice-president, T. F. Doan; fourth vice-president, Vernon Watson. Emil Guenther was elected secretary-treasurer, and Mr. Blair was elected to the board of trustees. During the meeting, which was attended by a number of out of town members, several interesting talks were given. The state licensing law and its application to architects, also the state building code, were discussed by Mr. James. Architect Doan of Bellingham gave a talk in which he pointed out the necessity of enforcing certain laws which would be beneficial to the architect and the general public. Architect Charles Saunders of the American Institute of Architects, who was a guest at the banquet, gave a talk on "The Value of an Idea," which was highly instructive, and well received. Other speakers of the evening were Edgar Blair, Harold H. Ginnold and Wm. Jones. Several applications for membership were received after the business meeting was over.

Magazine for Eastern School

The following item, published in the Daily Advertiser of Lafayette, Ala., is evidence of appreciaton of the value of The Architect and Engineer outside the State of California:

The donation of a life subscription to The Architect and Engineer magazine, for the library of Southwestern Institute, by Mr. Edward Mehlert, of San Francisco, was announced today. Mr. Mehlert was until recently a resident of this city, being representative for the Trelkeld Co., which has the commissary contract for the Southern Pacific. A short time ago he was transferred to San Francisco. During his stay here Mr. Mehlert, himself a college man, took much interest in local school activities. Before leaving he mentioned the fact that there is no architectural or engineering magazine in the Institute library and expressed the desire to make the donation referred to above, which was accepted with much appreciation on the part of the local school.

Henry McCullough Dead

The death of Mr. Henry McCullough, pioneer contractor in Alameda county, occurred at his home in Berkeley, December 15th, following an illness of less than one week. Mr. McCullough built many of the prominent public and commercial buildings in the College City, including the city hall and First National bank. He was at one time a member of the contracting firm of Kidder & McCullough.

With the Engineers

A Monument in Accident Prevention

By J. J. ROSEDALE, Consulting Safety Engineer

COMMENTS have been made to the effect that the new Matson building in San Francisco and illustrated in the November Architect and Engineer, is a beautiful monument which attracts the attention of strangers on the ferry and steamers approaching San Francisco. While these comments are true, it is doubtful if very many know that this building is likewise a monument in accident prevention, in that not a serious nor fatal accident occurred on this structure during the course of its construction. This remarkable record will be of considerable interest to the building industry and may possibly assist in bringing about better safety conditions on construction work in California.

Time and again, certain contractors and foremen have been known to say, "Safety work is all right in manufacturing plants, but it can't be done on construction work." It is gratifying to state that the new Matson building is proof that it can be done.

Certain contractors, too, who have frequent accidents on their jobs, are in the habit of saying, "What difference does it make? We are insured and can afford accidents. The insurance company will take care of our losses." These contractors are like persons who play solitaire and cheat themselves. They are only fooling themselves, for they will realize if they study their compensation insurance costs, that their rates are very high and that they, or the owners, are paying for their high ratio of accidents on buildings. The present plan of experience rating gives every contractor in California an equal opportunity to reduce his compensation costs and save money for himself and the owner, providing such contractor will take every necessary precaution to prevent accidents on his work.

The Matson building has broken all records in the prevention of accidents; for every effort was made by the Lindgren Swinerton Company, Inc., the contractors, to provide all necessary safeguards and precautions for their employees. In fact, these contractors have gone a step further in the matter of preventing accidents by engaging the services of a specialist (the writer) to look after the safety work on all their construction jobs. They are performing a humanitarian deed in preventing needless accidents and also saving money for their clients, the building owners.

Construction on the Matson building was started January 29th, 1922, and up to about November 1st, 1923, an average of 200 workers, representing 21 different crafts, were engaged in its construction. The building has a frontage of 173½ feet on two streets and is 317 feet in height from the basement to the tower.

Insurance companies and contractors are astonished at the excellent record made and the low cost of compensation paid out on this job. There were 60 lost time minor accidents, none of which, it is gratifying to state, were serious or fatal injuries. The cost of compensation and medical fees was $6,841.

The cost of safeguarding workers on this building was as follows:

Planking floors	$ 6,250.00
Guarding machinery	250.00
Guarding floor openings, stairways, two elevator cages, two elevator shafts	3,500.00
Sidewalk canopy	1,350.00
Canopy on suspended scaffold, railings, toe boards and outside protection	750.00
Ladders and temporary stairways	800.00
Total	$12,900.00

The total cost of safeguarding 200 workmen for a period of about 19 months was $12,900.00, or $64.50 per employee.

These excellent results were accomplished through frequent inspections by the writer in the capacity of chief construction engineer for the California Industrial Accident Commission up to July 1st, 1923, and since that time as consulting safety engineer for the Lindgren, Swinerton Co., Inc., and with the hearty co-operation of C. E. Greenwood, superintendent for Lindgren, Swinerton Co., Inc., the Matson Navigation Company, their construction engineers, Messrs. A. A. Brown and U. G. Brown, their building inspector, H. J. Wagner, and the foremen, sub-contractors and employees.

Architect Resigns

Louis S. Stone, Stockton architect, has resigned as a member of the Stockton Architectural Commission, which is in charge of preparing plans for the proposed municipal auditorium. W. J. Wright and Glen Allen, the other members of the commission, have agreed to complete plans for the structure in accordance with the original contract.

Centennial of Cement Industry

OLD RECORDS on file in the British patent office show that in 1824—just one hundred years ago—an English bricklayer named Joseph Aspdin was awarded a patent for a material he called "Portland cement". At that time a number of men were engaged in experiments in an effort to produce a cement superior to the natural cements then in use. As far back as 1756 an English contractor named John Smeaton had discovered that an impure limestone containing a certain amount of clayey matter possessed decided hydraulic properties when burned. Aspdin's contribution was his discovery of the value of taking proper proportions of different ingredients and then pulverizing and thoroughly mixing them before they were burned into clinker, which later was finely ground. He called his material "Portland" cement because when it hardened it resembled a building stone quarried on the Isle of Portland.

Although Aspdin's invention was brought out in 1824, it was not until 1872 that the Portland cement industry started in the United States. Of course natural cements had been used here for years, and in the late sixties imported Portland cement was gaining a strong foothold in the American market. In 1872 David O. Saylor established a plant for the manufacture of Portland cement at Coplay, Pennsylvania, and so far as can be ascertained this is the first plant of its kind to be started in this country. Within a few years other plants were built at South Bend, Indiana, Kalamazoo, Michigan, and various parts of the east.

Many interesting stories are told in connection with the early efforts to produce Portland cement in the United States. One man used a cook stove in which to burn rock while conducting his experiments. Another used a piece of sewer pipe as a kiln, and ground his materials in a coffee mill. Still another pressed a bent car-axle into service as a part of a grinding machine. For a number of years the reputation of imported cements was so strong that American manufacturers had a difficult time in securing a market for their product. It was not until the late nineties that the home product took its place on an equal footing with imported cement, and eventually won the market.

One hundred years after the invention of the material, the plants of the United States are producing more Portland cement than the rest of the world combined. United States Geological Survey figures indicate that about 135,000,000 barrels were made in this country in 1923.

This development has necessitated the revolutionizing of methods of manufacture. Where the early pioneers used crude dome-like kilns for burning their raw materials a modern plant contains huge rotary kilns—steel brick-lined cylinders that may weigh as much as eight Pullman cars. One of these great modern kilns will produce as much clinker in a day as one of the old kilns could turn out in a year. The old-fashioned grinding machinery has been supplanted by a variety of crushers and roll, hammer and ball mills, in which the raw materials and clinker are reduced to a powder finer than flour.

The centennial of the invention of Portland cement is an important date in industrial history, and as such will be fittingly observed by various organizations in the building field.

Appointed District Engineer

The Portland Cement Association announces the appointment of Mr. J. E. Jellick as district engineer in charge of its Los Angeles office, 548 South Spring street.

Mr. Jellick received his training at the University of Idaho. For ten years he was engaged in various engineering work in Southern California with the Southern California Edison Company and the Los Angeles County Road Department as senior resident engineer. For the latter he was in responsible charge of constructing many Southern California highways.

About two years ago Mr. Jellick joined the staff of the Portland Cement Association, serving as field engineer in Los Angeles County until his recent appointment as district engineer.

To Standarize Prepared Roofing

At a meeting held by the Department of Commerce with representatives of the division of simplified practice and the chamber of commerce of the United States, manufacturers, distributors and consumers of prepared roofing agreed to the following simplifications as being of benefit not only to the industry but also to the public at large:

1. To eliminate all grades or kinds of slate-surfaced and also stone-surfaced prepared roofing that do not measure up to the requirements of the "Class C Label" of the Underwriters' Laboratories.
2. To reduce the varieties of smooth surface roofing to even lines or grades—weights and qualities being considered.

This simplified practice recommendation, became effective Jan. 1, 1924, and is to hold for one year.

Field of the Contractor

Counting the Cost Correctly

Some Reasons for Wide Variations in Bids

By E. W. ROBINSON*

IN dealing with estimates, first in importance is the record of estimates. On all important jobs there should be two, and sometimes three independent estimates of quantities of work to be done. These should be made on sheets of a distinctive color. Notations should be made on these sheets as the items are listed, so that any one can at any time check the quantities or extensions pertaining to any single or particular part of the structure. Totals should be transferred to the cost sheets, also colored for quick identification.

Cost sheets should not only show the amount of work to be done, unit and total costs, but should also show in detail how the unit costs were determined. This is often done on scratch paper which is destroyed thus making it difficult to check the accuracy of an estimate. Complete detail records of estimates will greatly assist in revising figures for changes in plans and specifications and will also be valuable in court in event of litigation.

Another important idea in dealing with costs is to co-ordinate cost keeping and cost estimating. The system of keeping cost on work under construction must be such that the data can be used for estimating on future work. Conversely an estimate of cost should be so detailed that when the work is being done the actual cost can be checked against the estimate.

I believe it is better to first estimate the cost of labor and materials on the job and then add the overhead. It is the practice of my company to divide this into job overhead and office overhead. The latter item is more constant, while the job overhead, including supervision, watching waterboys, liability insurance, depreciation of equipment on the job, field office expense, bond premium, etc., is subject to wide variation.

It is perhaps a source of wonder to owners as well as to engineers in charge of work as to the reason for the great variations in bids from constructors for doing a certain specified amount of work. It is perhaps only fair to state that it is also true that some of the bidders on a job wonder how some of their competitors arrived at the amount of their proposals. Some of the things that cause wide variations in the proposals are as follows:

First—Sometimes a constructor does not want the job, but bids on it as a matter of policy. He therefore, does not spend much time on his estimate and plays entirely safe by bidding high.

Second—A man may bid on a class of work that he is entirely unfamiliar with, and if he has no records of former bids of similar work to judge by he may be ultra conservative in his estimated costs, or he may be exceedingly low.

Third—It is a fact that occasionally crooked constructors, or those entirely irresponsible put in a wild bid, usually much lower than the work can be done for, hoping that by some trick or by some accident he may get the job at an adjusted figure, which will net a profit.

Fourth—Errors in interpreting the plans and specifications sometimes lead to large errors. This is especially liable to happen where only one man works up an estimate, and shows the importance of having at least two complete and independent estimates of the quantities of work to be done, and preferably by two different estimators.

Fifth—Occasionally a bidder will have inside information, that the other bidders do not have, as to an impending drop in the price of some materials of importance, or to proposed changes to be made in the plans after bids are received.

Sixth—Perhaps the greatest cause for wide variations in bids is a simple error in the estimate, usually in the addition or multiplication. The writer has compared estimates with a great many constructors, after the letting, and can say that in 90 per cent. of the cases all great variations were found to be in the simplest of operations in preparing the summary of the estimate, what is commonly called a "bust." In preparing an estimate of a building with eight or ten typical floors, it is an easy matter to include one floor too many, or one floor too few (i.e., third to ninth floor inclusive easily called six floors).

As the estimator's experience broadens he learns from his own experience, and

*A paper read before the Texas Section of the American Society of Civil Engineers.

from the experience of others, a great many things affecting costs that may appear surprising at first thought. For instance, it is common practice by many to estimate the labor cost of placing wood trim in rooms, such as picture moulding, chair rail and base board, at a certain price per lineal foot per member. Thus a three member base would cost 50 per cent. more to place than two member, yet in most cases, if a good job is required in fitting the base to the plaster wall, it will actually cost less to place a three member base than that composed of two members.

Anyone will likely agree off hand that it should cost more to shovel by hand crushed stone than rounded gravel, and without further analysis to estimate the shovelling of all crushed stone alike. Yet crushed stone of certain sizes, or where it is uniform size, as it is for sprinkling filters, costs much more to handle than a mixture of varying sides. Also crushed trap rock weighing 3200 pounds or more per cubic yard will be much more costly to handle than crushed limestone weighing 2500 pounds per cubic yard.

This is not only because of the weight of the stone itself, but because there seems to be a tendency for it to separate from the mortar in handling when used as a concrete aggregate. There is a tendency for a person seeking information as to cost of mixing and placing concrete, for example, to watch a job under construction, count the number of men working, find out the number of cubic yards placed in an hour or a day, and take that as the labor cost for estimating the doing of similar work. Not only does he generally miss the lost time every job is subject to, but data taken in the morning when the men are fresh will not be comparable with what the same men do in the afternoon when tired. Nor is work done on a cool day properly comparable with that done on a hot day. Also if there is an extensive plant used in placing the concrete the casual observer does not get the cost of moving and preparing the plant for each run of concrete.

The writer knows of two jobs where this cost was one-third of the total labor cost of placing concrete where the yardage involved amounted to 9000 cubic yards. Inverted concrete spandrel beams on a building or through concrete girders on a bridge look the same as other beams and girders on the plans, but the labor cost of forming and placing concrete is from 25 to 50 per cent. higher than it is where the slab is at top of beam or girder. Another matter of concrete design calling for additional labor cost is where the widths of beams cannot be formed with stock widths of lumber. Also timber structures must be studied closely for waste in cutting from stock lengths of lumber. It has been found that frequently workmen will shovel and wheel gravel or crushed stone to a concrete mixer at a cheaper price per cubic yard than they will shovel and wheel the same material the same total distance. All of these incidents and many others of similar nature are usually gained from actual experience and generally at some cost.

To Stop "Snowballing"

Building contractors in Los Angeles and other cities in lower California have decided to balk further "snowballing" practices of building labor. Realizing that the fault rests with the contractors themselves the executive committee of the Associated General Contractors of America held a meeting recently at which resolutions were prepared calling on every employer of building labor to refrain from the practice of recruiting skilled mechanics from other jobs by money inducements above the prevailing wage scale. Bonuses of from $2 to $6 a day have been offered by builders to men engaged on other structures. Pyramiding of wages in excess of the contract scale has been the result, for a contractor must pay to hold his men after he has secured them and must be ready to meet any offer that might be made to his crew. The following is the resolution, a copy of which has been sent to every builder in lower California.

"Whereas, the Southern California Chapter, Associated General Contractors of America, represents about 100 of the principal builders and construction contractors of Southern California and has the interests of the building public and this great industry in mind, and

"Whereas, it has come to our attention that in the past many contractors and others have made the serious mistake of recruiting crews of skilled workmen from other jobs by the unethical practice of offering a wage more than the prevailing scale, and

"Whereas, this practice has served to work a hardship upon the builders so deprived of help and restricted the output of the local workmen because of lost time in turnover and the removal of incentive for honest effort, now

"Therefore, be it resolved, That the Southern California Chapter, Associated General Contractors of America, does heartily condemn this practice among any employers and calls upon the builders and contractors of Southern Cali-

fornia to put an end immediately to said practice."

The chapter desires all builders, whether they be members of the association or not, to stand together and co-operate for stability in construction costs by supporting the attitude of the local branch of the association in condemning this objectionable practice.

Colored Lighting Aids Realtor in Renting Store Room

That the power of light has been appreciated by many persons outside of the electrical industry, has again been proved in San Francisco, says the Journal of Electricity. In one of the residential sections of the city a real estate agent had the occasion to rent a store room that was adjacent to a moving picture theatre.

The store room had stood vacant for some time and the agent had been unable to rent it despite the fact that considerable effort was exerted in endeavoring to do so. Signs were placed in the windows that fronted the street and the other customary aids employed by agents were used.

The public failed to take any notice of the vacancy and no applications were received by the agent or owner. Then the agent decided to illuminate the store at night in order that persons might be attracted in that way.

In lighting the store an extensive installation of colored lights was made. Red, orange, yellow and blue color screens were placed over the light sources in the interior of the store room. As the display window at the front of the store occupied the entire space, all of the lighting effects that were secured in the room were visible from the street. The exterior of the store was not lighted at all and the vivid contrast of the colorfully lighted interior to the dark street was most marked.

According to eye-witnesses, the store, after being so lighted, attracted a large amount of attention. Crowds coming to and from the moving picture theatre gathered in front of the window and peered into the store room. The realtor's sign, located in the store room, served to notify interested persons of the reasons for so illuminating the store. The location was rented shortly after the experiment was made.

Planting for Outdoor Theatre

Mr. Emerson Knight, landscape architect and engineer, 9 Geary street, San Francisco, has completed plans and supervised construction and planting for an outdoor theatre for Mr. Max M. Cohn's "Little Brook Farm" at Los Gatos, California. The construction is of rubble stone and the seating capacity about 250.

Office Building Owners and Managers to Confer

The members of the office building management profession on the Pacific coast will meet in San Francisco at the Fairmont hotel, February 8th and 9th to consider some of the problems confronting them. The delegates will come primarily from California, but a considerable number are expected from Portland and Seattle as well as from cities to the east.

Several prominent men are on the program. Mr. W. L. Huber, C. E., will present a paper on "Types of Construction," dealing with the advantages, disadvantages and economics of various types.

Mr. Thos. McCaughern of the Pacific Board of Fire Underwriters will explain some of the basic principles of schedule rating. The aim of this paper will be to show how various economies in construction or variety of tenancies may affect the insurance rate adversely.

Mr. F. C. Dutton, manager of the Insurance Exchange building, San Francisco, is preparing a paper on the relation of light and area to rental values. It is Mr. Dutton's thought that these two factors are not given the weight they merit. Given a standard size room with a standard amount of light, at a certain rental, other layouts could be appraised accordingly. The writer proposes to set up such standards, based upon an exhaustive study.

Some of the other subjects to be dealt with are "Relationship of Owner to Manager"; "Modern Salesmanship Applied to Selling of Office Space"; and "Purchasing Procedure".

A prominent eastern man will be present to deliver an address at the closing banquet. He has not been definitely selected but will be a nationally known figure in the office building management profession.

Paint Company Expands

Mr. A. B. Campbell, who is well known on the Pacific coast by paint and varnish manufacturers, has become northern representative for the Brininstool company of Los Angeles, with headquarters in San Francisco, and warehouse facilities have been established in San Francisco to take care of the transbay business. The company reports that it is having a good demand for its materials in the bay region, particularly the San-a-Cote and Vel-va-Cote which products are being used extensively in office buildings, schools and other public structures. Mr. Campbell has been actively engaged in the paint and varnish business for the past twenty-five years.

Apprenticeship One of America's Greatest Problems

By FRANKLIN D. ROOSEVELT
President of the American Construction Council

WHAT I feel is one of the great problems in American industry today is the lack of young men to fill the ranks of certain trades, and the surplus of young men crowding some of the so-called "white collar" occupations.

This problem is essentially a national one, and can only be solved as such. The curing of a few local troubles is not enough. For this reason I feel that the belief expressed at the recent gathering in Washington under the auspices of the Federal Board for Vocational Training, that the American Construction Council was particularly well fitted as a national organization to take up this work so far as the construction industry was concerned, was well founded.

You have, first of all, to find in what building trades a shortage of manpower really exists. Some local shortages you will find are only the result of bad distribution, and a survey of this will open the way to the discovery of a remedy.

Having found where young men are needed there next follows to be determined what sort of school, or training, is needed to turn out graduates fitted to become apprentices—young men who will be welcomed into the ranks of skilled labor by all concerned. I hope you will establish such practical standards as will make any young man so trained eagerly sought after.

If you succeed in this your third problem—of how to assure those who take up these courses employment as steady as any building trade employment can be made—becomes comparatively easy.

In your work you may feel assured of the full support of the American Construction Council. On the Council as a whole will fall, I think, the duty of arousing the country to the need of placing skilled manual labor on a par with the clerical and non-manual occupations in public esteem.

What we need is more of the appreciation of the dignity of craftsmanship —the true guild spirit of the middle ages which made the workmanship of their day something to be studied and admired by all the generations following.

* * *

The following is Secretary Herbert Hoover's sentiments on the same subject given in a telegram addressed to the American Construction Council:

"At the time of the meeting of the American Construction Council's committee on apprenticeship I am very glad to extend my best wishes for its success in coping with one of the most difficult problems that faces the country today. There is no solution except by co-operation of the employer and labor and that is the purpose of your conference. There has been too little attention paid to the training of building trades workers and that this is partly responsible for the shortages which have been complained of recently no one can deny. Limitations in some trade unions have their corresponding action in some contractors' unwillingness to give facilities for apprentices. The printing trades have solved the problem by joint action of the employers and employees and that your committee should have taken it up gives hope of trial consideration. It is my hope that the Department of Commerce will be able to give active support to such constructive measures as may be agreed upon by all the groups represented in the council."

General Contractors Hold Banquet

The General Contractors' Association of San Francisco held its annual Christmas banquet in the French room of the Palace hotel, Thursday evening, December 20th. Approximately 100 persons attended.

With Ralph McLeran acting as toastmaster a pleasant evening was spent.

Mayor Jas. Rolph Jr., whom Toastmaster McLeran introduced as the "builder of big things," was the principal speaker and selected as his topic the Hetch Hetchy project and the upbuilding of San Francisco. Other speakers included Chief of Police Daniel J. O'Brien, Warren Shannon, John Monk, Chas. Gompertz, Edw. Ginley and Fred. Lindgren.

Passing of Asa L. White

Mr. Asa L. White, pioneer lumberman on the Pacific coast, and a national figure in the hardwood business, died Dec. 6 at his Los Gatos ranch, after an illness of several months. Mr. White was born in New Brunswick eighty-one years ago and came to California in 1868. Four years later, with his brother, the late Peter White, he organized the firm of White Bros. Peter White came to California in 1850 .

Mrs. White died two years ago. Surviving are a son, William Thornton White of Oakland, and a daughter, Mrs. Moses W. Faitonte, of Newark, N.J.

Average Building Costs in Southern California

THE Valuation Committee of the Southern California Chapter of the General Contractors of America has just completed a compilation of the present average building costs in Southern California.

The information in the compilation will be used by the county assessor as an aid in determining the correct valuation of buildings. It will also be used by the mortgage and loan departments of many local banking institutions as a guide to the accurate appraisal of structures.

The Valuation Committee is composed of Messrs. J. C. Bannister, P. M. Jones, and Paul B. Davidson. The chart showing their report follows:

Class A steel frame buildings—Cost per cubic foot: Office buildings, 53 cents; hotels, 58 cents; lofts, 28 cents; warehouses, 25 cents.

Class A reinforced concrete buildings—Cost per cubic foot: Office buildings, 50 cents; hotels, 55 cents; lofts, 25 cents; warehouses, 20 cents.

Class C brick buildings—Cost per cubic foot: Stores or theaters on ground, rooms, apartments, etc., above, 33 cents; apartments, 38 cents; lofts, 20 cents; warehouses, 15 cents. One-story garages, per square foot, $1.75; one-story stores, per square foot, $2.25.

Frame buildings—Cost per square foot: California houses, good, $3; medium, $2.50; cheap, $1.75. Bungalows, special, $5 to $6; good, $3.60; medium, $3; cheap, $2.50. Bungalows, out of town (no restrictions), good, $3.75; medium, $2.75; cheap, $2. Residences, two-story, good, $6 to $8; medium, $4.50; cheap, $3. Outbuildings, good, $2 to $2.50; medium, $1.70; cheap, $1. Corrugated-iron buildings, all kinds, approximately $1.

Portland Cement Stucco Standardized

The American Concrete Institute investigated the methods of applying Portland cement stucco for more than six years before it finally adopted its Standard No. 25—Recommended Practice for Portland Cement Stucco—on April 1, 1923.

In arriving at this recommended practice, the Institute's committee C-3 considered the views based on the actual experience of engineers and architects from every part of the country, including America's foremost users of stucco.

The Portland Cement Association has published a reprint of the committee's report under the title "Portland Cement Stucco," a copy of which may be obtained free upon application to the Association in Chicago.

Other matter in this edition includes twelve plates of stucco surfaces, four of them in color, three full pages of drawings of stucco details and seven new pages of photographic illustrations showing stucco finished houses of various types in widely distributed locations.

Attention is also directed to the tables showing quantities of materials and of colors and to the summary of important points to be remembered in the use of stucco.

Foreign Combinations to be Probed

The following summary of a section of the annual report of the Department of Commerce has been prepared and released by the Department's Trade Press Service:

Notice given by the American government of its intention to thoroughly investigate the activities of foreign combinations controlling raw materials of vital need to American industry and for which our manufacturers are predominantly dependent on imports, has resulted in stemming the tide of advancing prices, according to the annual report of Secretary of Commerce Hoover for the past fiscal year, which will be made public shortly in accordance with the law.

In discussing the situation Secretary Hoover says: "There are a number of necessary raw materials for the supply of which we are predominantly dependent on imports from foreign countries. Possibly as a result of the war, but more particularly during the past eighteen months, there has been a growing tendency for producers of these commodities to combine in control of prices as against the American market. This is particularly the case in nitrates, tanning extracts, quinine, rubber, sisal, tin, cork, mercury, tungsten, and various minor minerals.

"The effect of these price combinations in the consequent higher cost to American consumers presents a most serious problem," Secretary Hoover declares, pointing out that while we are vigorously in control of price combinations in respect to our own industries, we are, of course, powerless to reach these foreign combinations through our antitrust laws.

"Under authority of Congress," the secretary's report says, "an exhaustive examination of such combinations was undertaken by the department before the close of the fiscal year to determine—first, the character and extent of the combinations themselves; second, whether alternative sources of these raw materials could be stimulated and therefore natural competition induced; third.

WRITE IN ON THE SPECIFICATIONS

Buttonlath

THE selection of Buttonlath as the base for the walls of a building is a tribute to the judgment of the architect. Buttonlath is in successful use today in thousands of California homes, factories and office buildings.

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Sales Offices: Salt Lake City, El Paso. 272

what relief could be obtained by stimulation of synthetic or substitute materials within our own borders; and fourth, what protective or retaliatory legislation could be undertaken."

LOS ANGELES BUILDING FORECAST FOR 1924

(Continued from page 109)

WAREHOUSE, 10 stories and basement, class A reinforced concrete, 100x190 ft. (for L. A. Furniture Mart), s. e. cor. San Pedro and Commercial Sts.; Los Angeles Warehouse Co., owner; A. C. Martin, 228 Higgins Bldg., architect; plans being prepared. $500,000

HOTEL BUILDING, 5 stories 400 rooms, Point Loma; reinforced concrete construction; Point Loma Hotel Co., owner; Myron Hunt, architect; plans being prepared. $1,500,000

APARTMENT HOTEL, 11 stories, class A, steel frame or reinforced concrete; San Vincente Blvd. and Ocean Ave., Santa Monica; Shoreham Apartment Hotel Co., owners; Davies & Baume, Long Beach, architects; preliminary plans made. $2,500,000

APARTMENT BUILDING, class A, Ambassador apartments, Alboni Place and Ocean Ave., Long Beach; W. Horace Austin, Long Beach, architect; Stradley & Newton Co., Los Angeles, contractors; plans being completed. $750,000

JONATHAN CLUB BUILDING, class A, steel frame, 195x165 ft. (will contain stores, offices and club quarters); n. w. cor. Sixth and Figueroa Sts.; Schultze & Weaver, Pacific Mutual Bldg., architects; plans being prepared. $2,000,000

WOMAN'S ATHLETIC CLUB BUILDING, 7 stories and basement, class A, reinforced concrete, 150x157 ft., Flower St. between Eighth and Ninth; Allison & Allison, Hibernian Bldg., architects; plans completed. $800,000

SHRINE AUDITORIUM, class A reinforced concrete and steel, 588x302 ft.; Royal and Jefferson Sts.; Al Malaikah Temple, owner; J. C. Austin and A. M. Edelman, associated architects; G. Albert Landsburgh, consulting architect; revised plans completed and bids to be taken. $2,500,000

SOUTHERN CALIFORNIA ATHLETIC CLUB BUILDING, 12 stories and basement, 200 dormitory rooms; Wilshire Blvd. between Coronado and Carondelet Sts.; Edwin Bergstrom, Citizens National Bank Bldg., architect; plans being prepared. $2,000,000

ELKS LODGE BUILDING, 12 stories, class A steel frame, 262x150 ft., s. w. cor. Sixth St. and Parkview Ave.; Lodge No. 99, B. P. O. E., owner; Curlett & Beelman, Union Bank Bldg., arcets; plans being prepared. $1,500,000

LOS ANGELES COUNTY HALL OF JUSTICE, 11 stories and basement, class A steel frame, 225x181 ft., n. e. cor. Broadway and Temple St.; Allied Architects Association, architects; excavation completed and foundation started; bids on general contract and other work to be called for soon. $4,000,000

LOS ANGELES COUNTY HOSPITAL BUILDINGS, additions to present group, class A and class C construction; Allied Architects Association, architects; plans being prepared. $4,000,000

PASADENA CITY HALL, LIBRARY AND AUDITORIUM, CIVIC CENTER, Pasadena; competition to be held to select architect; bonds voted. $3,500,000

LOS ANGELES CITY HALL, class A, to be built in civic center, Main St. north of First; competition to be held to select architect; bonds voted. $5,000,000

LOS ANGELES CITY CENTRAL LIBRARY, class A construction, Normal Hill, Fifth St. and Grand Ave.; Bertram Goodhue, New York, and C. M. Winslow, Van Nuys Bldg., Los Angeles, architects; working plans being made. $1,500,000

The Registration Tangle

"Architectural registration is getting to be like the automobile laws in the early days. You can scarcely cross a state line without being arrested. Most state registration laws, to be sure, include a provision for reciprocity, but this happens to contain a joker. Ordinarily it stipulates that registration shall be granted without examination to registered architects from other states, provided the qualifications required there are equal and the same privilege is extended in return. Now, as no two states have exactly the same requirements—some demanding more general education; some more professional education; and some, more practical experience—it is open to any state to refuse reciprocity, either on the ground that its requirements are greater in this or that respect, or, if they are less, on the ground that they are not accepted as equal by the other state.

It has been, moreover, the practice of the National Council of Architectural Registration Boards that when registration was granted in the home state under exemption from examination provisions, as was ordinarily the case with practitioners of experience and standing, such registration is not accepted as ground for registration by transfer in another state; in other words, registration by exemption stops at the state line. To the unfortunate beneficiary of exemption at home the other state says: Go back and be examined in your own state, and then we will consider a transfer of registration. Very well, he takes the examination at home, perhaps a "senior examination" intended for men in practice for many years and calculated to establish his experience and personal responsibility, perhaps even the full written examination theoretical and practical. Even then he has no reasonable assurance that it will be accepted in the other state. Michigan has recently refused a transfer of registration from another state, giving the ground that the examination there only lasted two days, whereas the Michigan examination lasts three. There is little else to do than to appear and take an examination in each state.

As one can scarcely anticipate when one may get a job in another state, this may still not prevent one from breaking the law. The examinations may be held as stated at rare intervals, and no provision be made for an ad interim registration. Your building may have to be done before there is opportunity for you to appear to prove your competence.

All this is not an argument against registration. Good or bad, it has got past argument when twenty odd states

PUBLIC LIBRARY

Reed Memorial Chapel, Denver, Colorado

THIS beautiful chapel is built of Carrara marble, designed by Signore Romanelli, noted Italian sculptor of Florence. The stone was quarried and executed in Italy. All the stone work was set in mortar of Medusa Stainless White Cement. McPhee & McGinity, Denver, supplied the Medusa products.

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MEDUSA
WHITE CEMENT

have a law of some sort. The others need one now if it is only as a club in self-defense against the requirements of other states. But one may hope that this mutual clubbing will give way to a broader policy. As with the automobile, reason will begin to prevail when the nuisance gets intolerable enough.—Architectural Record.

To the above the Bulletin of the Illinois Society of Architects adds the following caustic comment:

"Whenever the architectural profession becomes as well organized as the medical profession and its members are willing to devote as much time and thought to professional matters as is devoted by the doctors, then conditions will change.

"Can anyone conceive of a more utterly ridiculous situation than to compel a thoroughly qualified architect of many years of successful practice and holding a certificate of registration by examination in any state, to be compelled to take a written examination in another state before a board composed of a chemical engineer, a land surveyor, an electrical engineer, a railroad engineer and an instructor of design who has never had any actual architectural practice?

"If architects complain that the public does not respect the law controlling the profession, architects should interest themselves in the securing of at least sensible regulation and sane control by actual practitioners of their own profession."

Monolith Portland Cement Company

One of the new advertisers in this month's Architect and Engineer is the Monolith Portland Cement Company of Los Angeles, whose plant is at Monolith, California. So great has been the demand for this company's material that its output has been sold several months ahead. Monolith is different from the ordinary cement because of its waterproof properties, the latter being ground into the material in the process of manufacture. In other words, Monolith is waterproof in the sack and may be transported or stored in the dampest weather without the necessity of taking special precautions to keep it dry. Besides the Monolith plastic waterproof cement, this company also manufactures a plain Portland cement of high uniform grade. The company's products are for sale by all building material dealers.

Not His Fault

The story was brought out during the work now going on in connection with the erection of a well-known factory. The new foreman being a hustler and wanting to make a record for himself, caught one of the brick masons snatching a bit of rest in the shade of a wheelbarrow.

"What do you think you are getting paid for? Get on the job if you don't want to be fired," he commanded.

"All right," drawled the mason, "but I can't see what all the rush is about. Rome wasn't built in a day, you know."

"That may be," was the foreman's rejoinder, "but I wasn't boss of that job."

Apartment House at 655 Powell Street, San Francisco, for Oser Estate.

Hauser Casement Windows

Specified and used—Hyman and Appleton, Architects; Hays-Oser Company, Builders.

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Paulsen Bldg., Spokane, Wash.
Provident Bldg., Tacoma, Wash.

Prepared Roofing Versus Shingles

By DOZIER FINLEY
Director Technical Research, Paraffine Companies, Inc.

THE agitation against the use of shingles does not come from the manufacturers of prepared roofing, but comes from fire prevention engineers, who have made the most careful study of fire hazards throughout the United States; who have made innumerable tests of every type of material entering into the construction of buildings, from the cellar to the peak of the roof, and who have carefully studied all of the conditions obtaining in the larger conflagations, as well as in small fires occuring during the past half century. These fire prevention engineers have determined a minimum of susceptibility in the matter of inflammable fire-retardent and fireproof materials, and have brought every pressure to bear on manufacturers, on municipal bodies and all others concerned, whereby materials having at least this minimum resistance to fire shall be used in building construction.

The largest number of these fire prevention engineers is in the employ of the National Board of Underwriters' Laboratories, Inc., fire insurance companies, local boards of underwriters and the like. Not a few of them are employed by large corporations to protect the property of these corporations.

The prepared roofing manufacturers, among many other makers of building materials, have spent thousands of dollars in research work to bring their product to a point where it will pass the recommendations of these fire prevention engineers. They have so far succeeded that they can supply roofing materials composed of paper, tar and rags, which are so treated and compounded that they will pass the same tests for fire resistance and production of burning brands as are passed by the tile and metal roofs.

It may be inconceivable to the lay mind how paper, tar and rags can resist fire, being in themselves inflammable. No one knows better than the fire prevention engineer that fire is a peculiar thing and that the best method of extinguishing it is by smothering it. A homely illustration is that of smothering a kettle of burning grease by throwing a cloth over it. In the instance of the prepared roof, not only is there a smothering action, but under an intense burning heat the material tends to form into a mass of coke, which acts as a retardent to the progress of the fire.

The prepared roofing manufacturers have no quarrel with the shingle manufacturers and do not attempt to place shingled roofs in an unfavorable light. It is to be pointed out that the shingle manufacturers have every opportunity in the world to co-operate with the fire prevention engineers and through research work to improve their product in such a manner that it will pass the tests that are deemed requisite by these engineers.

Those whom the fire prevention engineers represent have the largest amount of money invested in this matter and consequently are the ones most to be considered. The insurance on building construction is carried by those who give employment to these experts, and, naturally, the whole trend of the work of these experts is to develop every means and method possible to safeguard the property in which their superiors have billions of dollars at stake.

Attractive Built-In Fixtures

With the cost of building still high the owner naturally seeks to keep down the expense as far as possible by economizing in space. Therefore, when building a home or an apartment house, he finds that built-in fixtures are a factor not to be overlooked. His approval is more likely to be given if the fixtures in question contribute to the beauty and comfort of the interior.

To this end the Built-in Fixture Company, 2608 San Pablo avenue, Berkeley, is manufacturing a line of utilities not heretofore equalled. For example, there are the cooler type cupboard, the table cabinet, the broom closet unit equipped with ironing board door, all of which may be installed separately or in combination. There is no wasted wall space where built-in fixtures have been specified. Other units include the breakfast seat and table which may be installed in old or new houses, also the kitchen cabinet—a tremendous labor saver, the Peerless bathroom cabinet with mirror, medicine chest, etc., and last but not least, Peerless phone cabinet with seat, a handy shelf to write on and place for hanging the directory which folds up on the inside of the door and is concealed from view when the phone is not in use.

Spiritual Carbon

Knocking, in an individual, is just as much evidence of lack of power as it is in an automobile.

United States Short 1,000,000 Homes

SOMETHING of the problem confronting the construction industry and the building material supplies manufacturers was disclosed at the three-day convention of the National Conference of Housing in America at Philadelphia on December 5, 6 and 7. Statistics presented by speakers disclosed a shortage of from 800,000 to 1,000,000 homes in the United States at this time. Profiteering, irregular employment, unwillingness of banking institutions to lend money on real estate and failure of contractors to employ apprentices were blamed for this shortage.

New York, Chicago, Philadelphia, Cleveland and Boston are now facing an acute housing shortage. In many other cities there are no houses available for workingmen and few are under construction.

To relieve the housing shortage, that is dangerous to the health and morals of young Americans, at least six remedies must be adopted, according to officials of the conference. They are:

Banks must lift the embargo on money for building. At present banks are unwilling to make loans over 50 per cent. of the value of the building. This retards construction and also allows profiteering on second mortgages.

Builders must be content with smaller profits to stimulate construction.

The type of house for the workingman must be changed so as to get cheaper construction. "Gingerbread" designs that are unnecessary can be eliminated. This would open the home market to the salaried group of from $35 to $50 a week; and 30 per cent. more of the population would be home-owners.

Cost of building materials must be lowered by increased production, with wages of the makers of the materials the same as now received.

Cities must improve suburban properties, installing sewers, water mains, and electricity, so the land will be available for building operations.

Building codes of "Tutankhamen's time" must be changed to modern codes and standardized. Variety could then be eliminated and production of building material produced at lower cost.

Personal

Announcement is made of an association between Messrs. Maurice C. Couchot and Jesse Rosenwald, consulting engineers, building and industrial plants, with offices at 60 Sansome street, San Francisco. Mr. Couchot was formerly located at 234 Pine street, San Francisco.

Mr. Howard Frost, president of Los Angeles Pressed Brick Company, has been elected a director of the American Face Brick Association. He will serve for three years.

Mr. Arthur S. Bent of Bent Bros. Construction Company, has been elected a member of the Los Angeles Board of Education to succeed Mr. Frank O. Bristol, resigned.

Architect Ralph O. Beattie has moved from 555 N. Western avenue to 2813 S. Bronson avenue, Los Angeles.

Architects Quintin & Kerr, 310 Weber building, Alhambra, have taken over the architectural business of Architect Ervin T. Smith. Mr. Smith is now residing at Casa Grande, Arizona.

Mr. Emmet G. Martin, formerly manager of the offices of Architect Albert C. Martin in Los Angeles, has opened offices for the practice of architecture at 603 Citizens National Bank building, Los Angeles. Mr. Arlos R. Sedgley, architect, is in charge. Manufacturers' catalogs are requested.

The Concrete Construction

of the following buildings designed by architects and engineers,

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Six-story apartment house for Chas. A. Johnson, Sacramento and Jones Streets.

Six-story apartment house for Chas. A. Johnson, Hyde and Sutter Streets.

Six-story hotel for J. Welsh, Sutter near Jones Street.

Six-story apartment house for J. Welsh, Sutter and Hyde Streets.

BOOK REVIEWS

Edited by
CHARLES PETER WEEKS

Portfolio of Designs for Moderate Cost, Indiana Limestone Homes. Vol. 5, Series B. Published by Indiana Limestone Quarrymen's Association, Bedford, Indiana.

This book, beautifully printed, features a new use of stone in the building of residences and is something more than simply a building material producers' booklet. It has a direct message to architects that we believe will interest them. Practical suggestions are given for the use of rough-sawed quarry-run stone in moderate cost residence construction. All the designs shown in this booklet were specially prepared after considerable study of the problem.

The publishers state that while they are making a small charge for this booklet, when sent to the ordinary individual, it will nevertheless be mailed free to all architects requesting same; also to architectural draftsmen writing for same on employer's business stationery, the charge being simply to prevent the promiscuous mailing of the booklet, and restrict the general mailing to bona fide interested parties.

Brick Men to Convene

The week of February 10th will be Brick Week in California. On that date a caravan of 500 brick manufacturers from all parts of the country will arrive in Los Angeles to attend the ninth annual convention of the Common Brick Manufacturers' Association of America.

As guests of the California Common Brick Manufacturers' Association, the visiting brickmen will tour the central part of the state before descending on Los Angeles. After the convention week their itinerary includes visits to the principal points of interest in Southern California and the border, thence East through Arizona and Texas.

The caravan will arrive over the Union Pacific in three ten-coach sections, under the direction of Ralph P. Stoddard, secretary-manager of the brickmakers' national organization. Secretary Stoddard is now conferring with California brick manufacturers and completing arrangements for the convention, regarding which he is quoted as saying:

"This is the first time we have ever held a national convention west of Kansas City. We decided to hold our 1924 convention in California because your state is fast taking the lead as the principal brick producing state in the Union. Illinois is the only state whose brick production exceeds yours, but your manufacturers are increasing their output by leaps and bounds. Los Angeles today is one of the leading brick producing centers in the world. California manufactures 25 per cent of the nation's common brick."

In Charge of Factory Sales

Mr. C. H. Davies, for a good many years in the employ of S. F. Bowser & Company, and principally known to the manufacturing industry through his managership of Bowser's factory division in Chicago, has assumed charge of the factory sales promotion division of the entire Bowser organization, with headquarters in Fort Wayne.

Mr. Davies relieves Mr. L. E. Porter, assistant general manager, of this branch of promotional work, and now works in collaboration with Mr. T. D. Kingsley, general sales manager of S. F. Bowser & Company. Under Mr. Porter's direction, in connection with his other duties, the factory's business has shown a very appreciable increase during the past several months.

The Meaning of Co-Operation

"You have a dollar,
I have a dollar.
We swap.
Now you have my dollar,
And I have your dollar.
We are no better off.
You have an idea,
I have an idea.
We swap.
Now you have two ideas,
And I have two ideas.
Both are richer.
What you gave you have.
What you got I did not lose,
This is co-operation."
—Improvement Bulletin.

Standardization of Concrete Mixers

Fourteen provisions for standardization of concrete mixers were approved by the Joint Committee on Construction Equipment in session with members of the Associated General Contractors and representatives of mixer manufacturers. These provisions, which cover over thirty specific points involved in the standardization of mixers, provide for a reduction in the number of types manufactured, cover the furnishing of auxiliary equipment standard capacities and ratings and many other points of mutual interest to the manufacturer and the user of equipment.

Walls finished with Cabot's Double-White; roof stained with Cabot's Creosote Stains in mottled colors.

Witmer & Watson, Architects, Los Angeles

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DOUBLE-WHITE

Whiter than white lead and has 50 per cent more opacity or hiding power. Two coats will do the work of three of lead and oil. Has the same flat white and beautiful texture that Old Virginia White shows on shingles on brickwork.

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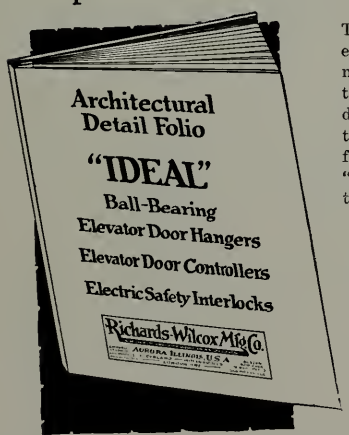
Helpful Reference Data for Your Files



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Using Birchfield Boilers

The following buildings have recently been equipped with Birchfield boilers:

Biltmore Apartments, Los Angeles.
Hammon & Peterson Apartments, Seattle.
Eagles Building, Cle Elum.
Kress Building, Long Beach.
Sunnyside M. E. Church, Portland.
Willard Building, Longview.
D. & R. Theater, Aberdeen.
Fairfax High School, Los Angeles.
City of Spokane Garage, Spokane.
Paul Revere Apartments, Seattle.
Hamilton School, Yakima.
Black Manufacturing Company Building, Seattle.
Warstock Theater, Portland.
W. S. Leland Office, San Francisco.
Pacific Car and Foundry Company Hotel, Renton.
Brawley School, Brawley.
Agnew State Hospital, Agnew.
West Riverside School, Riverside.
Otis Elevator Building, San Francisco.
Eagles Hall, Aberdeen.
Campfire Girls Clubhouse, Seattle.
Fields Motor Car Company, Portland.
Portland Railway Light and Power Company.
I. O. O. F. Temple, Astoria.
Wallace School, Kelso.

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Sill Plate on Flush Type, handle detached

Made in three distinct types, at as many prices. *All are operated inside the screen.*
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Two have detachable handle.
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Made in bronze, and galvanized and plated steel and iron.

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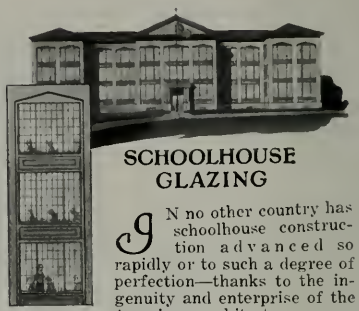

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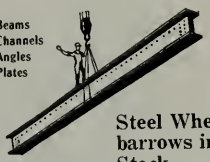

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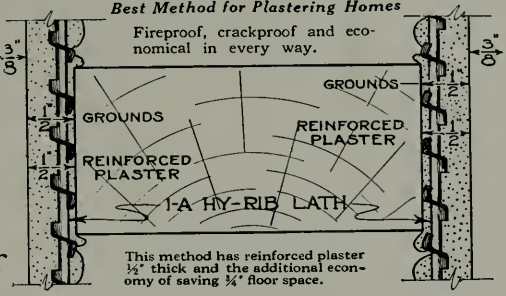

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Present Cost of Building Materials

THESE quotations are based on reliable information furnished by the San Francisco material houses. Date of quotations, January, 1924.
All prices f. o. b. cars San Francisco or Oakland For country work add freight and cartage to prices given.

Bond—1½% amount of contract.

Brickwork—
Common, $35.00 per 1000 laid.
Face, $75.00 per 1000 laid.
Enamel, $150.00 per 1000 laid.
Common, f. o. b. cars, $15.50, plus cartage.
Face. f. o. b. cars, $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (Delivered to building in carload lots.)

12x12x3 in.	$102.00 per M
12x12x4 in.	115.00 per M
12x12x6 in.	160.00 per M
12x12x8 in.	165.00 per M

Hod carriers, $6.50 per day.
Bricklayers, $10.00 per day.
Lime—$2.25 per bbl.; carload, $2.15

Composition Floors—24c to 50c per sq. ft. In large quantities, 24c per sq. ft.

Composition Stucco—$1.90 to $2.10 per sq. yard (applied).

Concrete Work (material at San Francisco bunkers)—

No. 3 rock	$2.15 per yd.
No. 4 rock	2.30 per yd.
Niles pea gravel	3.50 per yd.
Niles gravel	2.35 per yd.
Niles top gravel	2.75 per yd.
City gravel	2.15 per yd.
River sand	1.75 per yd.
Delivered bank sand	1.00 per yd.

SAND

Del Monte	$1.25 to $1.50 per ton
Fan Shell Beach (Car lots, f. o. b. Lake Majella)	$2.50 to $3.00 per ton
Swedish cement	$2.68 per bbl.
Belgian cement	2.65 per bbl.
Cement (f. o. b. cars)	3.01 per bbl.

Rebate for sacks, 10c each.

Atlas "White"	$ 9.75 per bbl.
Medusa "White"	$ 9.95 per bbl.
Forms, Labors	$30.00 per M

Wage—

Concrete workers	$5.00 per day
Cement finishers	8.50 per day
Laborers	5.00 per day

Dampproofing—
Two-coat work, 25c per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $5.25 per square.
Hot coating work, $2.00 per square.
Wage—Roofers, $8.00 per day.

Electric Wiring—$6.00 to $10.00 per outlet for conduit work (including switches).
Knob and tube average $3.00 to $5.50 per outlet.
Wage—Electricians, $8.00 per day.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in 4-story bldg., $3250; direct automatic, about $3000.

Excavation—
$1.25 per yard, if sand. Teams, $10.00 per day. Trucks, $21 to $30 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $105.00 per balcony.

Glass—(Consult with manufacturers.)
21 ounce, 16c per square foot.
Plate, $1.10 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 30c per sq. ft.
Obscure glass, 28c per square foot.
Note—Add extra for setting.
Wage—Glaziers, $8.00 per day.

Heating—
Average, $2.25 per sq. ft. of radiation, according to conditions.
Wage—Steamfitters, $9.00 per day.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.
Wage—Iron workers, bridge and structural, $9.00 per day.
Architectural iron workers, $7.00 per day.

Lumber—(Prices delivered to bldg. site)
Common, $37.00 per M (average).
Com'n O.P. (select, avrg.....$42.50 per M

Flooring—

1 x 6 No. 3—Form lumber	$25.00 per M
1 x 4 No. 1 flooring	68.00 per M
1 x 4 No. 2 flooring	62.00 per M
1 x 4 No. 3 flooring	48.00 per M
1 x 6 No. 2 and better flooring	62.00 per M
1¼ x 4 and 6 No. 2 flooring	65.00 per M

Slash grain—

1 x 4 No. 2 flooring	56.00 per M
1 x 4 No. 3 flooring	50.00 per M

No. 1 common run to

T. & G.	$38.00 per 1000
Lath	6.00 per 1000

Shingles—(Add cartage to prices quoted)

Redwood, No. 1	$1.10 per bdle.
Redwood, No. 2	.90 per bdle.
Red Cedar	1.25 per bdle.

Building Paper—

1 ply per 1000 ft. roll	$6.25
2 ply per 1000 ft. roll	9.60
3 ply per 1000 ft. roll	14.55
Sash cord com. No. 7	1.25 per 100 ft.
Sash cord com. No. 8	1.40 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.30 per 100 ft.
Sash weights cast iron	60.00 Ton
Nails, $4.25 base.	

Hardwood Flooring—

	⅞x3¼" T & G Maple	1⅛x2¼" T & G Maple	⅞x3½" Sq. Edge Maple
			116 M ft.
	⅞x2¼" T&G	⅝x2" T&G	⅞x2" Sq. Ed
Clr. Qtd. Oak	$179 M	$124.00 M	$156 M
Sel. Qtd. Oak	135 M	92.50 M	114 M
Clr. Pla. Oak	140 M	92.50 M	114 M
Sel. Pla. Oak	124 M	80.00 M	97 M
Clear Maple	135 M	81.00 M	
Orion	140 M	100.00 M	100 M
Bagac	130 M	90.00 M	90 M
Laying and Finishing	16c ft.	15c ft.	13c ft.

N. B.—Materials and labor are plentiful at present time.

Wage—Floor layers $9.35 per day.

Millwork—
O. P., $100 and up per 1000. R. W., $120 and up per 1000.
Double hung box window frames, average) with trim, $8.00 and up, each.
Doors, including trim (single panel), $10.50 and up, each.
Doors, including trim (five panel), $8.50 each.
Screen doors, $3.50 each.
Cases for kitchen pantries seven feet high, per lineal foot, $7.50 each.
Dining room cases, $8.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average) $16 per m.
For smaller work, average, $28.00 to $35.00 per 1000.
Wage—Carpenters, $8.00 per day.
Laborers—$5.00 per day.

Marble—(Not set), add 40c to 60c per ft. for setting.

Columbia	$1.60 sq. ft.
Alaska	1.60 sq. ft.
San Saba	3.15 sq. ft.
Tennessee	2.00 sq. ft.
Verde Antique	3.75 sq. ft.
Westfield Green	3.50 sq. ft.

Wages—Marble setters, $8.00 per day; helpers, $5.50 per day. Marble polishers and finishers, $6.00 per day.

Painting—

Two-coat work	30c per yard
Three-coat work	45c per yard
Whitewashing	5c per yard
Cold water painting	9c per yard

Turpentine, $1.20 per gal. in cases and $1.05 per gal. in tanks.
Raw Linseed oil....$1.05 per gal. in bbls.
Boiled Linseed Oil.. 1.10 per gal. in bbls.
Pioneer white and red lead, 11¾c lb. in one-ton purchases; 12c lb. for less than 500 lbs.
Wage—Painters, $8.00 per day.
Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.50 lineal foot
8-inch	1.75 lineal foot
10-inch	2.25 lineal foot
12-inch	3.00 lineal foot

Pipe Casings—14" (average), $7.50 each.

Plastering—(Including Lathing)
Interior, on wood lath, 65c per yard.
Interior, on metal lath, $1.25 per yard.
Exterior, on brick or concrete, $1.30 per yard.
Portland White, $1.75.
Interior on brick or terra cotta, 60c to 70c per yard.
Exterior, on metal lath, $1.85 to $2.25 per yard.
Wood lath, $7.00 a yard per 1000.
Metal studding, $1.25 to $1.50 per yard.
Suspended ceiling and walls (metal furring, lathing and plastering), $2.00 per yard.
Galv. metal lath, 33c and up per yard, according to gauge and weight.
Lime, f. o. b. S. F. warehouse, $2.50 bbl.
Lime, bulk, per ton of 2000 lbs., $19.50
Hardwall plaster, $15.40 per ton, f. o. b. warehouse. (Rebate on sacks, 15c.)
Finishing plaster (carload lots), $19.00.
Hydrate of lime, $19.50 per ton, f. o. b. warehouse.
Wage—Plasterers, $10.00 per day.
Lathers, $8.00 per day.
Hod carriers, $7.00 per day.

Plumbing—
From $70.00 per fixture up, according to grade, quantity and runs.
Wage—Plumbers, $9.00 per day.

Reinforcing Steel—
Base price for car load lots, $3.80 per 100 lbs., f. o. b. cars on docks.
Average cost to install, $25 per ton.
Wage—Housesmiths, $8.00 per day.

Roofing—
Five-ply tar and gravel, $6.25 per square for 30 squares or over.
Less than 30 squares, $6.50 per square.
Tile, $35.00 to $50.00 per square.
Redwood Shingles, $12.00 per square in place.
Cedar Shingles, $12.00 per sq. in place.
Reinf'd Pabco, 7 yr. roof, $7.50 per sq.
Reinf'd Pabco, 10 yr. roof, $10.25 per sq.
Reinf'd Pabco, 20 yr. roof, $13.50 per sq.
Recoat, with Gravel, $3.00 per square.
Wage—Roofers, $8.00 per day.

Sheet Metal—
Windows—Metal, $2.00 a square foot.
Fire doors, (average), including hardware, $2.30 per sq. ft.

Skylights—
Copper,$1.25 a square foot (not glazed)
Galvanized iron, 35c a square foot (not glazed).
Wage—Sheet metal workers, $8.50 per day.

Stone—
Granite, average $7.50 sq. ft. in place.
Sandstone, average Blue, $4.75; Bosie, $2.80 sq. ft. in place.
Indiana Limestone, $3.00 per sq. ft. in place.
Wage—Stone cutters, $8.00 per day.
Stone setters, $8.50 per day.

Store Fronts—
Copper sash bars for store fronts, corner, center and around sides, will average 85c per lin. ft.
Note—Consult with agents.

Structural Steel—$112 per ton (erected).
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.
Cost of steel for average building (erected), $108 per ton.

Steel Sash—
All makes, from S. F. stock, 26c to 34c per sq. ft.
All makes, plant shipment, 28c to 34c per sq. ft.
(Includes mullions and hardware.)

Tile—White glazed, 80c per foot.
White floor, 80c per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $1.00 per sq. ft. laid.
Wage—Tilesetters, $8.50 per day.

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Building Material Exhibit, 77 O'Farrell St., San Francisco
Oakland—Building Material & Manufacturing Exhibit, 1424 Franklin Street.

Sacramento Union High School Building — Edgar A. Mathews, Architect

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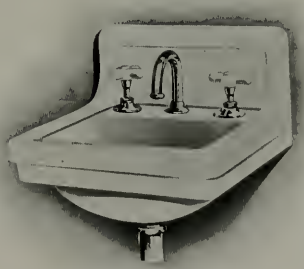

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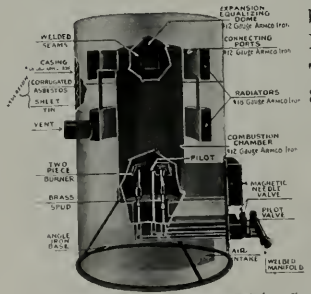

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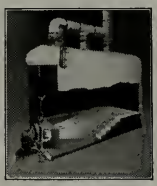

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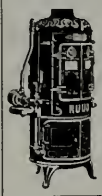

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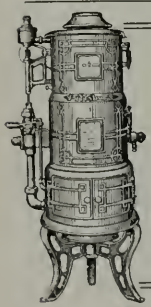

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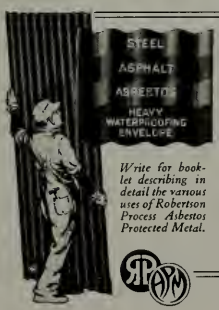

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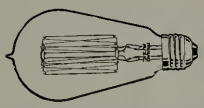

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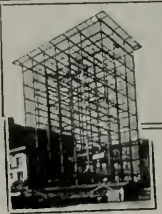

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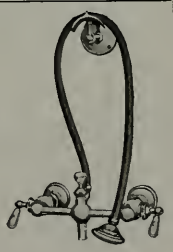

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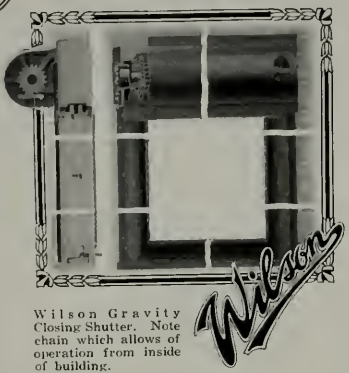

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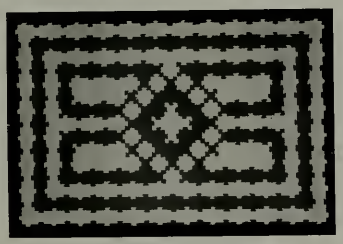

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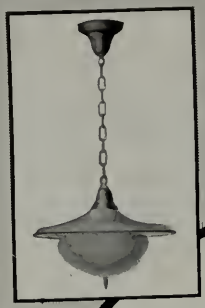

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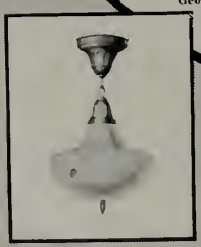

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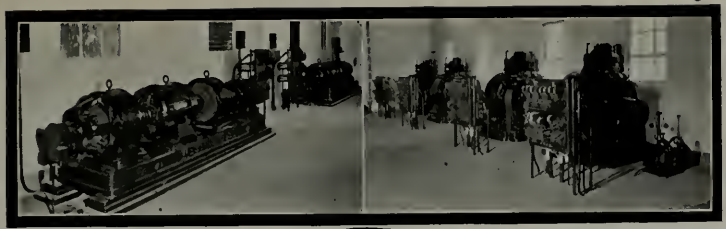

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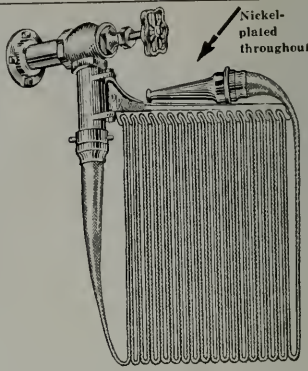

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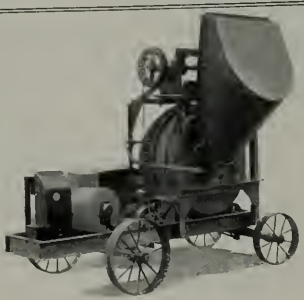

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330 Tenth St., San Francisco, Calif.
Lumber Exchange, Seattle, Wash.
Exchange Bldg., Portland, Ore.

Bank of Italy Bldg., Los Angeles, Calif.
Paulsen Bldg., Spokane, Wash.
Provident Bldg., Tacoma, Wash.

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ART STONE
Artstone, Inc., 2-4 Valencia St., San Francisco.

ASBESTOS MATERIALS
Johns-Manville Inc., of California, 500 Poet street, San Francisco.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.
Jones Bros. Asbestos Supply Co., Inc., 500 Second St., San Francisco.
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

ART METAL
Federal Ornamental Iron and Bronze Co., 16th St., and San Bruno Ave., San Francisco.
Michel & Pfeffer Iron Works, 1415 Harrison street, San Francisco.
California Artistic Metal & Wire Co., 349 Seventh street, San Francisco.

ARCHITECTURAL TERRA COTTA
N. Clark & Sons, 116 Natoma St., San Francisco.
Gladding, McBean & Company, Crocker Bldg., San Francisco.
Livermore Fire Brick Works, 604 Mission Street, San Francisco.
Tropico Potteries, Inc., Glendale, Cal.

AUTOMOBILE TURNTABLES
M. E. Hammond, Pacific building, San Francisco.

BANK FIXTURES AND INTERIORS
C. F. Weber & Co., 601 Mission St., San Francisco.
Home Mfg. Co., 543 Brannan St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
Pacific Manufacturing Company, San Francisco, Los Angeles, Oakland and Santa Clara.
The Fink & Schindler Company, 218-13th St., San Francisco.

BATHROOM ACCESSORIES
The Fairfacts Company, Inc., 234 W. 14th St., New York.

BEDS—WALL
California Wall Bed Co., 714 Market St., San Francisco.
Marshall & Stearns Co., Phelan Bldg., San Francisco.

BELTING AND PACKING
New York Belting and Packing Company, 519 Mission St., San Francisco.
H. N. Cook Belting Co., 401 Howard St., San Francisco.
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

BLACKBOARDS
C. F. Weber & Co., 601 Mission St., San Francisco, Los Angeles and Reno, Nevada.
Stewart Sales Co., 247 Rialto Building, San Francisco.
Western States Seating Company, 39 Second Street, San Francisco.

BLINDS—VENETIAN AND DIFFUSELITE
The J. G. Wilson Corporation, Call-Post building, San Francisco, and 624 North Broadway, Los Angeles.
Western Blind & Screen Company, factory, Los Angeles; San Francisco representatives, Edward C. Dehn, Hearst Bldg., and C. F. Webber Co.

BOILERS
Birchfield Boiler Company, Tacoma, Washington. See advertisement for Coast agencies.
Kewanee Boiler Company, Factory Branch, Exposition Building, San Francisco.
Kewanee Water Supply System, Simonds Machinery Co., 816 Folsom St., San Francisco.
Main Iron Works, 1000 Sixteenth Street, San Francisco.

BONDS FOR CONTRACTORS
Bonding Company of America, Kohl Bldg., San Francisco.
Globe Indemnity Co., 444 California St., San Francisco.
Fidelity & Casualty Co. of New York, Balfour Bldg., San Francisco.
Standard Accident Insurance Company, California Commercial Union Building, San Francisco.

BOXBOARD FIBRE SHIPPING CASES
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

BRASS GOODS, CASTINGS, ETC.
H. Mueller Manufacturing Co., 1072-76 Howard St., San Francisco.

BRICK—FACE, COMMON, ENAMEL, GLAZED
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
N. Clark & Sons, 116 Natoma St., San Francisco.
Richmond Pressed Brick Co., Sharon Bldg., San Francisco. Plant at Richmond, Cal.
Livermore Fire Brick Works and California Brick Co., 604 Mission St., San Francisco.
Cannon & Co., Sacramento; and 77 O'Farrell St., San Francisco.

BRICK & CEMENT COATING
Armorite and Concreta, manufactured by W. P. Fuller & Co., all principal Coast cities.
Minwax Co., Inc., 22 Battery St., San Francisco and 653 S. Clarence St., Los Angeles.
The Paraffine Companies, Inc., 475 Brannan St., San Francisco.
R. N. Nason & Co., 151 Potrero Ave., San Francisco.
Wadsworth, Howland & Co., Inc., Jas. Hambly & Son, 1333 E. 7th St., Los Angeles, and 229 Clay St., San Francisco.

BRICK STAINS
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Armorite and Concreta, manufactured by W. P. Fuller & Co., all principal Coast cities.

BUILT-IN FIXTURES
Built-In Fixture Company, 2608 San Pablo Ave., near Dwight Way, Berkeley, and Hoosier Store, Pacific Building, San Francisco.

BUILDERS' HARDWARE
Joost Bros., agents for Russell & Erwin Hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn., Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
Palace Hardware Company, Agents Corbin goods, 581 Market St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora; Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

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BUILDING MATERIALS, SUPPLIES, ETC.
Pacific Materials Co., Underwood Bldg., San Francisco.
Waterhouse-Wilcox Co., 523 Market St., San Francisco.
C. H. Jensen Co., Call Building, San Francisco.
Standard Supply Company, Standard Avenue, near Webester Street, Alameda.

BUILDING PAPER
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

BUILDING TILE (Burned Clay)
California Brick Co., 604 Mission St., San Francisco.

BURGLAR ALARMS
Smith Electric Company, 50 Natoma St., San Francisco.

CABINET MAKERS
Fink & Schindler Company, 218 13th St., San Francisco.
Home Manufacturing Company, 543 Brannan St., San Francisco.
Mullen Manufacturing Company, 64 Rausch St., San Francisco.
Lanmon Bros. Mfg. Co., 5th and Magnolia Sts., Oakland.
Pacific Mfg. Co., San Francisco, Los Angeles and Oakland.

CEMENT
Old Mission Portland Cement Co., Standard Oil Building, San Francisco.
Medusa Stainless White Cement, plain and waterproofed, carried in stock and sold by leading building supply dealers in California, Oregon and Washington.
The Paraffine Companies, San Francisco, and principal Coast Cities.
Pacific Portland Cement Co., Pacific Building, San Francisco; Portland, San Jose and Los Angeles.
Monolith Portland Cement Company, 703 Market St., San Francisco and Los Angeles.

CEMENT EXTERIOR WATERPROOF PAINT
Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
Minwax Co., Inc., 22 Batery St., San Francisco and 653 S. Clarence St., Los Angeles.
The General Fireproofing Company, 20 Beale Street, San Francisco
Bay State Brick and Cement Coating, sold by James Hambly, 229-233 Clay St., San Francisco.

CEMENT—WATERPROOF
Monolith Portland Cement Co., 215 W. 7th St., Los Angeles, and 800 Claus Spreckels Building, San Francisco.

CEMENT STUCCO
"California" sold by California Stucco Products Company, Holbrook building, San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CLAY PRODUCTS
N. Clark & Sons, 116 Natoma St., San Francisco.
California Brick Co. and Livermore Fire Brick Works, 604 Mission St., San Francisco.
Cannon & Co., Sacramento, Cal.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
Tropico Potteries, Inc., Glendale, Cal.
United Materials Co., Sharon Bldg., San Francisco.

CLOCKS—ELECTRIC TIME
Standard Electric Time Co., 461 Market St., San Francisco.
Pacific Electric Clock Company, 86 Third St., San Francisco.

COLD STORAGE PLANTS
Cyclopa Iron Works, 837 Folsom St., San Francisco.

CONCRETE CONSTRUCTION
Vannucci Bros., 16th and Church Streets, San Francisco.
Villadsen Bros., Inc., 749 Monadnock Building, San Francisco.

COMPOSITION FLOORS
"Linotol" plastic flooring, Hill, Hubbell & Co., 115 Davis St., San Francisco; 410 San Fernando Bldg., Los Angeles.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.

CONCRETE OR CEMENT HARDENER
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco

CONCRETE FURNITURE
Art Stone Distributing Company, 2-4 Valencia St., at Market, San Francisco.

CONCRETE MIXERS
Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.

CONCRETE REINFORCEMENT
Edw. L. Soule Co., Rialto Bldg., San Francisco.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Clinton Welded Wire Fabric, Wickwire Spencer Steel Corporation, 144 Townsend St., San Francisco.
Judson Mfg. Co., 817-821 Folsom St., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Triangle Mesh Fabric. Sales agents, Pacific Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., 709 Mission St., San Francisco.
Badt-Falk Co., Call-Post Bldg., San Francisco.

CONDUITS
"Sherardact," Garnett Young & Company, 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
Hansen, Robertson & Zumwalt, 4145 Broadway, Oakland.

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Barrett & Hilp, 918 Harrison St., San Francisco.
Herbert Beckwith, Everson Bldg., Oakland.
Larsen-Siegriat Co., Inc., 807 Claus Spreckels Bldg., San Francisco.
Lindgren-Swinerton, Inc., Standard Oil Building, San Francisco
R. W. Littlefield, 357-12th St., Oakland.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Dinwiddie Construction Co., Crocker Bldg., San Francisco.
John M. Bartlett, 357 Twelfth St., Oakland.
Clinton Construction Company, 923 Folsom St., San Francisco.
Monson Bros., 251 Kearny St., San Francisco.
Geo. Wagner, Park Ave., San Francisco.
T. B. Goodwin, 180 Jessie St., San Francisco..
McLeran & Co., R., Hearst Bldg., San Francisco.
Vukicevich & Bagge, 815 Bryant St., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.
I. M. Sommer, 401 Balboa Bldg., San Francisco.
Jas. L. McLaughlin, 251 Kearny St., San Francisco.
Alfred H. Vogt, 185 Stevenson St., San Francisco.
Lange and Bergstrom, Sharon Bldg., San Francisco and Washington Bldg., Los Angeles.
Carl T. Peterson, 185 Stevenson St., San Francisco.

CONTRACTORS' EQUIPMENT
Edward R. Bacon Co., Folsom at 17th St., San Francisco, and Los Angeles.

CONVENIENCE OUTLETS
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St.

CORK TILE
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.
David E. Kennedy, Sharon building, San Francisco, and Story building, Los Angeles.

CORK TILE FOR FLOORS
Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles, St., Los Angeles.
David E. Kennedy, Sharon Building, San Francisco, Story Building, Los Angeles.

CRUSHED ROCK
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.

CURTAINS—STEEL, ROLLING, FIREPROOF
The J. G. Wilson Corporation, Call-Post Building, San Francisco, and 621 North Broadway, Los Angeles.

DAMP-PROOFING AND WATERPROOFING
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
"Imperial," manufactured by Brooks & Doerr, Merchants National Bank Building, San Francisco.
Minwax Co., Inc., 22 Battery St., San Francisco, and 653 S. Clarence St., Los Angeles.
Samuel Cabot Co., Boston; represented in San Francisco by Pacific Materials Co., Underwood Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by the Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco

DOOR HANGERS
Pitcher Hanger, sold by National Mill & Lumber Co., 326 Market St., San Francisco.
Richard-Wilcox Mfg. Co., the Ewing-Lewis Co., 626 Underwood Building, San Francisco.
Stanley Works, New Britain, Conn... Monadnock Bldg., San Francisco.

DRAIN PIPE AND FITTINGS
"Corrosiron" Acid Proof, manufactured by Pacific Foundry Co., Harrison and 18th Sts., San Francisco.

DRAIN TILE
California Brick Company, 604 Mission Street, San Francisco.

DRINKING FOUNTAINS
Hawa Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 166-7th St., San Francisco.
San Francisco Elevator Company, Inc., 860 Folsom St., San Francisco.
Elevator Supplies Co., Inc., Hoboken, N. J.; San Francisco office, 186 Fifth St.
"Chelsea" dumb waiters, sold by M. E. Hammond, Pacific building, San Francisco.

ELECTRICAL CONTRACTORS
Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 956 Folsom St., San Francisco.
Central Electric Company, 177-79 Minna St., San Francisco
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Brown-Langlais Electrical Construction Co., 315 Fifth Street, San Francisco.
Newberry Electric Company, Alta Bldg., San Francisco
Smith Electric Company, 50 Natoma St., San Francisco.
Decker Electrical Construction Company, 149 New Montgomery St., San Francisco.
Electric Construction Company, 616 Broadway, Fresno.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Pacific Bldg., San Francisco.

ELECTRICAL PLUGS, RECEPTICALS, ETC.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St., San Francisco.

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"H. & H. Switches," Garnett Young & Co., 612 Howard St., San Francisco.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St.
Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.

ELECTRIC SAFETY INTERLOCKS
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.

ELECTRIC HEATING
Wesix Electric Heaters, manufactured by W. Wesley Hicks, Rialto Building, San Francisco.
"Gloleg" manufactured by Strait & Richards, Inc., Newark, N. J., represented by Atlantic Pacific Agencies Corporation, 204 Rialto Building, San Francisco.

ELEVATORS—PASSENGER and FREIGHT
Pacific Elevator & Equipment Co., 1129 Howard Street, San Francisco.
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 166-7th St., San Francisco.
San Francisco Elevator Co., 860 Folsom St., San Francisco.
Van Emon Elevator Company, 1159 Howard St., San Francisco.

ELEVATOR MOTORS AND CONTROL
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and First National Bank Bldg., San Francisco, Calif.

ELEVATOR SIGNALS, DOOR EQUIPMENT
Elevator Supplies Co., Inc., Hoboken, N. J.; San Francisco office, 186 Fifth St.
Randall Control & Hydrometric Corporation, 265A Minna St., San Francisco, and 523 Central Bldg., Los Angeles.
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.

ENGINEERS — CONSULTING, ELECTRICAL, MECHANICAL
Hunter & Hudson, Rialto Bldg., San Francisco.
Robert L. St. John, 1011 Flat Iron Bldg., San Francisco
Charles T. Phillips Company, Bank of Italy Bldg., San Francisco, and Roberts Bldg., Los Angeles.

FAIENCE TILE
Tropico Potteries, Inc., Glendale, Cal.

FELTS
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

FENCES—WIRE AND IRON
Standard Fence Company, 432 Bryant, San Francisco and 60th and Lowell Sts., Oakland.

FIRE BRICK, TILE & CLAY
Livermore Fire Brick Works, 604 Mission St., San Francisco.

FIRE EXIT LATCHES
Vonnegut Hardware Co., Indianapolis, Ind., represented in San Francisco by C. H. Jensen Co., Call Building.

FIRE ESCAPES
Michel & Pfeffer Iron Works, 1415 Harrison St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.

FIRE HOSE RACKS
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

FIRE-PROOF DOORS
Forderer Cornice Works, 269 Potrero Ave., San Francisco.
U. S. Metal Products Co., 330-10th St., San Francisco.
Kinnear Mfg. Co., represented in San Francisco by Pacific Materials Co., Underwood Bldg.
The J. C. Wilson Corporation, Call-Post Building, San Francisco, and 621 North Broadway, Los Angeles.

FIRE SPRINKLERS—AUTOMATIC
Fire Protection Engineering Co., 142 Sansome St., San Francisco.
Grinnell Company of the Pacific, 453 Mission St., San Francisco.
Independent Automatic Sprinkler Co., 72 Natoma St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIRE RETARDING PAINT
The Paraffine Companies, Inc., 34 First St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Company, 218-13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLAG POLES—STEEL
Pole & Tube Works, Newark, N. J., represented by H. M. Holway, 1007 Hobart Building, San Francisco, and 600 Metropolitan Building, Los Angeles.

FLOORS, BLOCK
Carter, Bloxonend Flooring Co., Kansas, Mo., represented on Pacific Coast by H. M. Holway, 1007 Hobart Building, San Francisco.

FLOOR CLIPS
Bull Dog Floor Clip Sales Co., 77 O'Farrell St., San Francisco, and 600 Metropolitan Bldg., Los Angeles.
Grip-Tite floor anchors. Cheek & Gillis, 625 Call Building, San Francisco.

FLOORING, HEAVY DUTY
Carter, Bloxonend Flooring Co., Kansas, Mo., represented on Pacific Coast by H. M. Holway, 1007 Hobart Building, San Francisco.

FLOORS—TILE, CORK, ETC.
Mangrum & Otter, 827 Mission St., San Francisco.

FLOOR VARNISH
Baas-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—Continued

Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, 55 Stevenson Street, San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

FLOORS—HARDWOOD
Oak Flooring Bureau, Ashland Block, Chicago, Ill.
Cadwallader, Gibson Co., 5th & Brannan St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
Strable Hardwood Company, 511 First St., Oakland.
E. L. Bruce Co., Manufacturers, Memphis, Tenn.
J. E. Higgins Lumber Company, 423 Sixth St., San Francisco.

FLOOR TREATMENT—HARDWOOD, COMPOSITION AND CONCRETE
Minwax Co., Inc., 22 Battery St., San Francisco and 653 S. Clarence St., Los Angeles.

FLOORS—MASTIC—FLOOR COVERING
Hill, Hubbell & Company, 115 Davis St., San Francisco.
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

FLUE LINING
California Brick Company, 604 Mission St., San Francisco.

FLUSH VALVES
Handy Self-Cleaning Flush Valve Co., 731 Folsom St., San Francisco.
Shroeder Flush Valve Company, 1300 N. Main Street, Los Angeles and 16 Steuart Street, San Francisco.

FUEL OIL SYSTEMS
S. T. Johnson Co., 1337 Mission St., San Francisco.
S. F. Bowser & Co. Inc., 612 Howard St., San Francisco.
Wayne Tank and Oil Co., 430 Fourth St., San Francisco.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.
C. B. Babcock Company, 768 Mission St., San Francisco.

FURNITURE—OFFICE, SCHOOL, CHURCH,
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., Second and Mission Sts., San Francisco.
W. & J. Sloane, 216 Sutter St., San Francisco.
Western States Seating Co., 39 Second St., San Francisco.
H. Rumph, 567 Howard St., San Francisco.
Fink & Schindler Company, 218-19th St., San Francisco.

FURRING TILE (Burned Clay)
California Brick Company, 604 Mission St., San Francisco.

GARAGE HARDWARE
The Stanley Works, New Britain, Conn., Coast sale offices, San Francisco, Los Angeles and Seattle, Wash.
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.

GARDEN FURNITURE
Art Stone Distributing Company, 2-4 Valencia St., at Market, San Francisco.

GAS HEATING
Pittsburg Water Heater Company, 478 Sutter St., San Francisco.
Ruud Automatic Water Heater, sold by Ruud Heater Company, 431 Sutter St., San Francisco.
C. R. Babcock Company, representing General Gas Light Company, 768 Mission St., San Francisco.

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 862 Mission St., San Francisco.
Cobbledick-Kibbe Glass Co., 666 Howard St., San Francisco.
Fuller & Goepp, 32 Page St., San Francisco, and Jackson, at Eleventh St., Oakland.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.

GRANITE
Raymond Granite Co., Potrero Ave., and Division St., San Francisco.

GRAVEL AND SAND
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

GYMNASIUM EQUIPMENT—LOCKERS, ETC.
Ellery Arms Co., 583 Market St., San Francisco.

HARDWALL PLASTER
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Joost Bros., agents for Russell & Erwin Hardware, 1053 Market St., San Francisco.
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Corbin hardware, sold by Palace Hardware Co., 581 Market St., San Francisco.
Vunnegut hardware, sold by G. H. Jensen Co., Call Bldg., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill.; Ewing-Lewis Co., 626 Underwood Building, San Francisco.

HEATING AND VENTILATING CONTRACTORS
Atlas Heating and Ventilating Company, Inc., Fourth and Franlon Sts., San Francisco.
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.

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Hateley & Hateley, Mitau Bldg., Sacramento.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Lawson & Drucker, 450 Hayes St., San Francisco.
Lupen and Hawley, 906 7th St., Sacramento.
William F. Wilson Co., 328 Mason St., San Francisco.
W. H. Picard, 5656 College Ave., Oakland.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
H. G. Newman Co., 2004 Telegraph Ave., Oakland.

HEATING & VENTILATING EQUIPMENT
W. S. Haines & Co.'s steam specialties. O. M. Simmons Company, 115 Mission St., San Francisco.
Hulting, Hurst & Hulting, representing Jas. P. Marsh Co., Monadnock Bldg., San Francisco.
C. A. Dunham, Chicago, Illinois; 585 Mission Street, San Francisco, and 119 E. 3rd Street, Los Angeles.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.
Illinois Engineering Co., 417 Market St., San Francisco.
Williams Radiator Company, 571 Mission St., San Francisco.
Warren Webster & Company, Sharon Building, San Francisco.

HEATERS, GAS GRATES, RADIATORS, ETC.
General Gas Light Company, 768 Mission St., San Francisco.
Ra-Do Fumeless Gas Radiators, Potter Radiator Corporation, 478 Sutter St., San Francisco
Humphrey Radiantfire, sold by Rudd Heater Company, 431 Sutter St., San Francisco.
Williams Radiator Company, "Gas Steam Radiators," 571 Mission St., San Francisco.
McLaughlin Metal Works, 223 J St., Sacramento.

HOLLOW BUILDING TILE (Burned Clay)
California Brick Company, 604 Mission St., San Francisco.

HOLLOW TILE BLOCKS
Cannon & Co., plant at Sacramento; 77 O'Farrell St., San Francisco.
California Brick Company, 604 Mission St., San Francisco.
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

HOSE—UNDERWRITERS UNLINED LINEN—RUBBER
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEMS
Chicago Signal Co., represented by Garnett Young & Co., 612 Howard St., San Francisco.

ICE MAKING MACHINERY
Cyclops Iron Works, 837 Folsom St., San Francisco.
"Frigedaire," Sold by W. L. Cochran, 880 Mission St., San Francisco.

INCINERATORS
The Incinerite, sold by M. E. Hammond, Mezzanine, Pacific Building, San Francisco.

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Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., and First National Bank Building, San Francisco.

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INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.

JAIL EQUIPMENT
Ralston Iron Works, 20th and Indiana Sts., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE ARCHITECT
Emerson Knight, 704 Market St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 514-516 Phelan Bldg., San Francisco.

LATHING AND PLASTERING
MacGruer & Simpson, 226 Tehama St., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.

LATHING MATERIAL—WIRE, METAL, ETC.
Buttonlath Manufacturing Co., Los Angeles and 207 Balboa Bldg., San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco
Truscon Steel Co., 709 Mission Street, San Francisco.
Wickwire Spencer Steel Corporation, 144 Townsend St., San Francisco.
United Alloy Steel Corporation, Canton, Ohio; Western Sales Office, Santa Fe Building, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.
Pacific Gas & Electric Co., Sutter St., San Francisco.

LIGHTING FIXTURES
Benjamin Electric Mfg. Co., New York, Chicago, 580 Howard St., San Francisco.
D. Dicrssen Co., 20 Second Street, San Francisco. Distributors Solar-Lite fixtures.
Roberts Mfg. Co., 663 Mission St., San Francisco.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St., San Francisco.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.

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LIMESTONE, INDIANA
Indiana Limestone Quarrymen's Association, Box 770, Bedford, Indiana.

LINOLEUM
D. N. & E. Walter & Co., 562 Mission St., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.
W. & J. Sloane, 216 Sutter St., San Francisco.
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.
Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles St., Los Angeles.

LINOTILE
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.

LUMBER
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland, Los Angeles and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Santa Fe Lumber Co., 16 California St., San Francisco.
J. E. Higgins Lumber Company, 423 Sixth St., San Francisco.
Sunset Lumber Company, First and Oak Sts., Oakland.

MANTELS—WOOD, TILE, ETC.
Mangrum & Otter, 827-831 Mission St., San Francisco.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Ray Cook Marble Company, foot of Powell St., Oakland.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.
Tompkins-Kiel Marble Company, 505 Fifth Ave., New York; also Chicago, Philadelphia and San Francisco.
Columbia Marble Co., 413 Rialto Bldg., San Francisco.

METAL DOORS AND WINDOWS
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 330 Tenth St., San Francisco.
Forderer Cornice Works, 269 Potrero Ave., San Francisco.
Michel & Pfeffer, Harrison and Tenth Streets, San Francisco.

METAL FURNITURE
Forderer Cornice Works, 269 Potrero Ave., San Francisco.
United Alloy Steel Corporation, Canton, Ohio; Western Sales Office, Santa Fe Building, San Francisco.

METAL STORE FRONTS
Cobbledick-Kibbe Glass Company, 666-8 Huward street, San Francisco, and Washington at Third St., Oakland.

METAL TRIM
Knapp Bros. Manufacturing Co., 625 Call Building, San Francisco.

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Pacific Manufacturing Company, San Francisco, Los Angeles, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
Lannom Bros. Mfg. Co., 5th and Magnolia Sts., Oakland.
The Fink & Schindler Company, 218-13th St., San Francisco.

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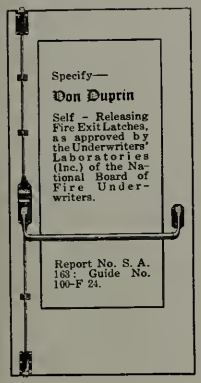
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I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tarmey Co., 681 Geary St., San Francisco.
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Artistic Painting Company, 39 Tehama St., San Francisco.

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Magner Bros., 414-424 Ninth St., San Francisco.
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R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
Standard Varnish Works, 55 Stevenson St., San Francisco.
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.
Oakley Paint Manufacturing Company, 727 Antania St., Los Angeles, and Hearst Building, San Francisco.

PARTITIONS—FOLDING AND ROLLING
The J. G. Wilson Corporation, Call-Post Building, San Francisco, and 621 North Broadway, Las Angeles.

PLASTERING CONTRACTORS
A. Knowles, Call Bldg., San Francisco.
MacGruer & Simpson, 266 Tehama St., San Francisco.

PLASTER REINFORCEMENT
National Steel Fabric Co., A. C. Rulofson Co., Pacific Coast Sales Manager, Monadnock Building, San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.
Luppen & Hawley, 906 7th St., Sacramento.
W. H. Picard, 5656 College Ave., Oakland.
H. G. Newman Company, 2004 Telegraph Ave., Oakland.

PLUMBING SUPPLY HOUSES
Crane Company, all principal coast cities.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
H. Mueller Manufacturing Company, 1072-76 Howard St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
West Coast Porcelain Manufacturers, 334-335 Wells Fargo Building, 85 Second St., San Francisco.

POLES AND PILING
Santa Fe Lumber Co., 16 California St., San Francisco.

PUMPS—HAND OR POWER
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
Simonds Machinery Co., 816 Folsom Street, San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Pelton Water Wheel Co., 2022 Harrison St., San Francisco.
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Tank & Pump Co., 430 Fourth St., San Francisco; 830 S. Los Angeles St., Los Angeles.
Byron Jackson Iron Works, 55 New Montgomery St., San Francisco.

REINFORCING STEEL
Edward L. Soule, Rialto Bldg., San Francisco.
Badt-Falk & Co., Call Bldg., San Francisco.
Judson Iron Works, San Francisco and Oakland.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Pacific Coast Steel Co., Rialto Bldg., San Francisco.
Truscon Steel Co., 709 Mission St., San Francisco.
United Alloy Steel Corporation, Canton, Ohio; Western Sales Office, Santa Fe Building, San Francisco.

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Johns-Manville Inc., of California, 500 Post St., San Francisco.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.

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Pacific Materials Co., 525 Market St., San Francisco.

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Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

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American Chain Co., Bridgeport, Conn. and Rialto Building, San Francisco.
Smith & Egge Mfg. Co., Bridgeport, Conn. Coast agents, Rawlins & Smith, San Francisco and Los Angeles.

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J. G. Wilson Corp, 621 North Broadway, Los Angeles, and Call-Post Building, San Francisco.

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Pole and Tube Works, Newark, N. J., represented on Pacific Coast by H. M. Holway, 1007 Hobart Building, San Francisco.

STEEL TANKS
Ocean Shore Iron Works, 55 Eighth St., San Francisco.
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STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Herrick Iron Works, 18th and Campbell Sts., Oakland.
Michel & Pfeffer Iron Works, 1415 Harrison street, San Francisco.
Judson Mfg. Co., 817-821 Folsom St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Ralston Iron Works, 20th and Indiana streets. San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Western Iron Works, 141 Beale St., San Francisco.

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The General Fireproofing Company, 20 Beale Street, San Francisco

STEEL ROLLING DOORS
Kinnear Rolling Steel Doors, sold by Pacific Building Materials Co., Underwood Bldg., San Francisco.
Wilson Rolling Steel Doors, the J. G. Wilson Corooration, 621 North Broadway, Los Angeles and Call-Post Building, San Francisco.

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Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
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Truscon Steel Company, 709 Mission St., San Francisco.

STEP AND WALK BRICK
California Brick Company, 604 Mission St., San Francisco.
United Materials Co., Sharon Bldg., San Francisco.

STONE
Indiana Limestone Quarrymen's Association, Box 770, Bedford, Indiana.
Raymond Granite Company, Potrero Ave. and Division Street, San Francisco.

STREET LIGHTING EQUIPMENT
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Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., and First National Bank Building, San Francisco.

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Western States Seating Co., 133 Kearny St., San Francisco.

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Johnson Service, Rialto Bldg., San Francisco.

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Livermore Fire Brick Works and California Brick Company, 604 Mission St., San Francisco.
Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles, St., Los Angeles.

TRAVELING CRANES
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Grinnell Co., 453 Mission St., San Francisco.
O. M. Simmons Co., 115 Mission St., San Francisco.
H. Mueller Mfg. Co., 1072 Howard St., San Francisco.
Kennedy Valve Mfg. Co., 23-25 Minna street, San Francisco.
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The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

VENTILATORS
H. H. Robertson Co., represented on the Pacific Coast by H. M. Holway, 1007 Hobart Building, San Francisco.

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W. & J. Sloane, 216-228 Sutter St., San Francisco.

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WATER SUPPLY SYSTEMS
Kewance Water Supply System—Simonds Machinery Co., agents, 816 Folsom Street, San Francisco.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE ENAMEL
"Gold Seal," manufactured and sold by Bass-Hueter Paint Co. All principal Coast cities.
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"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.
The Paraffine Companies, Inc., 34 First St., San Francisco, Los Angeles, Portland and Seattle.

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D. N. & E. Walter, 562 Mission street, San Francisco.

WINDOWS, REVERSIBLE, CASEMENT, ETC.
Hauser Window Co., 1362 Harrison St., San Francisco.
J. G. Wilson Corporation, 621 N. Broadway, Los Angeles; Call-Post Building, San Francisco.
Critall Casement Window Company, Detroit; Waterhouse-Wilcox Company, agents, 523 Market St., San Francisco.
The Casement Hardware Company, 241 Pelonze Building, Chicago, Ill.
Vincent Whitney Company, 356 Market Street, San Francisco.
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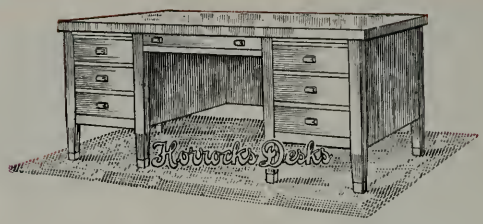

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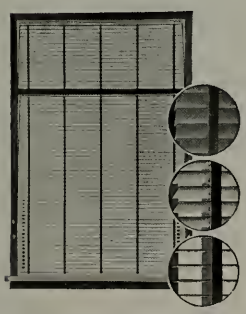

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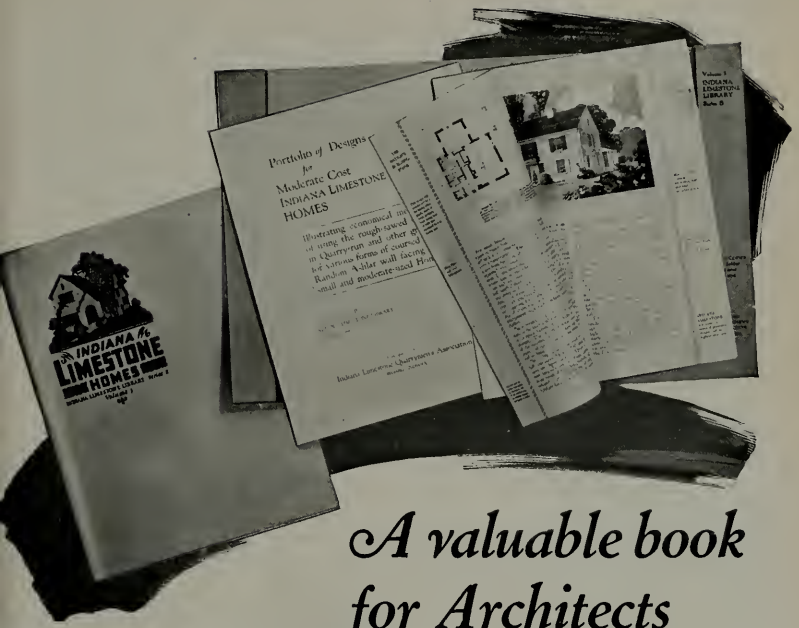

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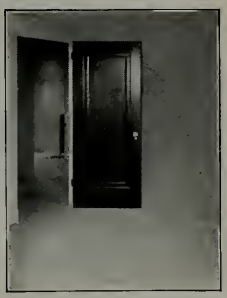
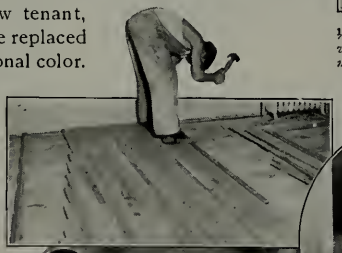


½" x 2" No. 1 Common oak flooring was laid over terrazzo in this modern 33 apartment building in St. Louis. Details on request.



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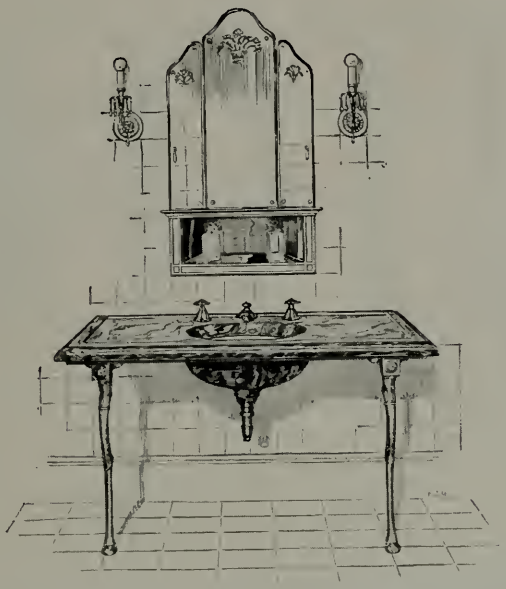

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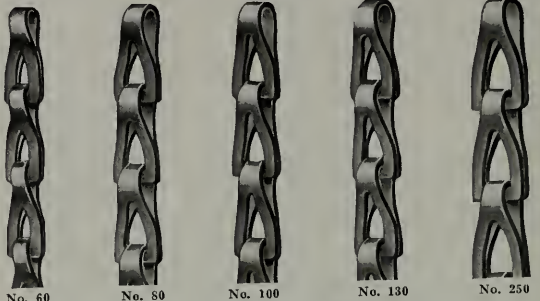

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ARCADE, COMMERCIAL BUILDING, RANCHO SANTA FE, DEL MAR, CALIFORNIA
REQUA AND JACKSON, ARCHITECTS

Frontispiece
The Architect and Engineer
February, 1924

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1924

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Rancho Santa Fe—California's Perfectly Planned Community

By LEE SHIPPEY

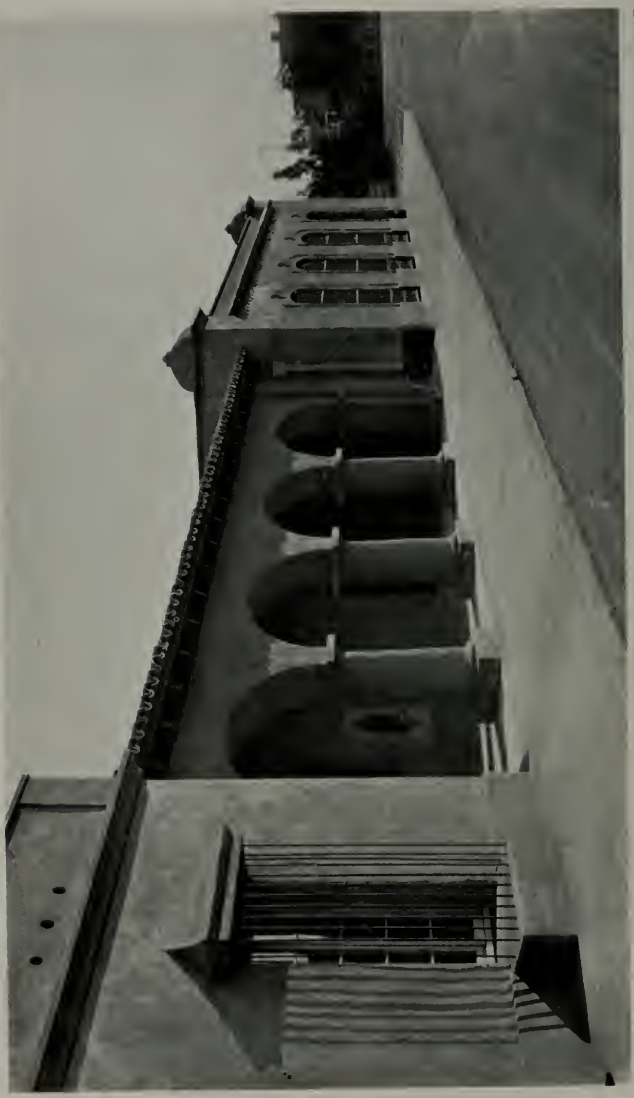
THINK of a park-line area of fifteen square miles in which many hundred handsome homes and a village containing all necessary educational and business buildings are to be constructed—and all of these improvements to be completed under the supervision of an architect. Could you find one square mile, much less fifteen, along the Champs Elysees or Riverside Drive, in Irvington-on-Hudson or Piedmont or Beverly Hills, in which there are no inharmonious structures or displeasing views?

Yet there is one such community — or, at least, one now is building. It has been planned on the theory that often your neighbors' architecture is quite as important to you as your own, and the planners have recognized the importance of architectural supervision of the entire area. They have safeguarded it by restrictions such as never before have been put on a similarly large area, and it is worth noting, for the benefit of all other communities, that those restrictions are

SKETCH FOR CIVIC AUDITORIUM AND SCHOOL ROOMS—REQUA AND JACKSON, ARCHITECTS

FILLING STATION, ACCESSORIES SALES ROOM AND WOMEN'S REST ROOM, RANCHO SANTA FE, DEL MAR, CALIFORNIA

LA MORADA, THE GUEST HOUSE, RANCHO SANTA FE, DEL MAR
REQUA AND JACKSON, ARCHITECTS



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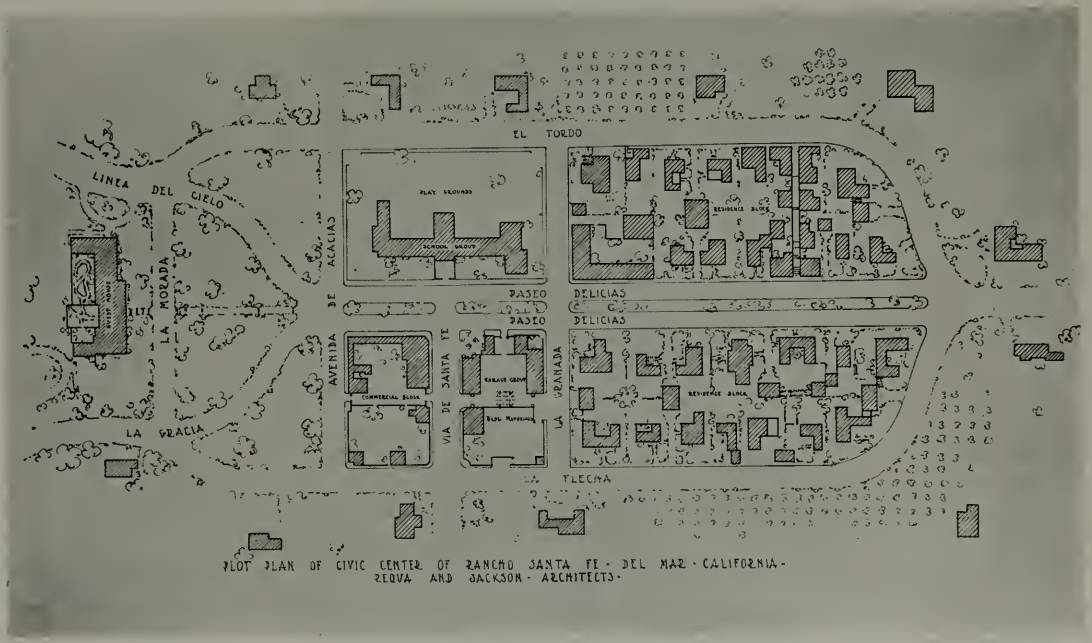


PLOT PLAN, CIVIC CENTER, RANCHO SANTA FE, DEL MAR
REQUA AND JACKSON, ARCHITECTS

proving a distinct advantage rather than a handicap to this development. People such as any community would be glad to have are eager to associate themselves with an enterprise which has become widely known as "the most perfectly planned land development project in the world." Everyone who is building a home there is not only willingly but eagerly consulting with the company's architects—first as to the site on which to build and then as to the building itself. And those who have watched the advancement of the undertaking are convinced that the result, within a few years, will be an achievement without rival.

The Santa Fe Land Improvement Company, subsidiary of the Santa Fe Railway system, bought Rancho Santa Fe, a 9000-acre cattle range in Northern San Diego County, California, years ago. It was a place to which nature had been most generous—undulating slopes guarded on

GASOLINE FILLING STATION, RANCHO SANTA FE
Requa and Jackson, Architects

three sides by mountain-etched skyline and within sight of the sea to the West, as if the encircling mountains had flung out an arm of friendly hills to protect it. And it was sentient with history and romance. Originally it was a Spanish land grant to Don Juan Mario Osuna, soldier of fortune and first alcalde of San Diego, who chose it as the loveliest and most fertile spot he could find and built on it an adobe manor house which still stands. The estate and its owner, Leandro Osuna, who inherited it, figured prominently in the war with Mexico.

The Santa Fe interests, with vision beyond that of many great business concerns, recognized the opportunity to convert the virgin range into an intensively beautified and highly organized community. They studied its possibilities and after deciding upon a plan for the best general development, they had experts—qualified architects, landscape, irrigation and other engineers, devote over a year to comprehensive study, before final plans were approved.

It is noteworthy that landscape and architecture were the first considerations in this "most perfectly planned" community. The first definite step was the dividing of the area into some 400 units, ranging from five to forty acres, each of which offered an attractive homesite, so that the completed community would somewhat resemble one of the beautiful chateau districts of Southern Europe. In the heart of these a group of commercial buildings, a delightful guest house and a school group were planned, Colonial-Spanish architecture being decided on as the appropriate expression of the history and romantic atmosphere of the region. Next, a graceful system of highways, 53 miles of fine hard roads serving every tract, was laid out. And not until that background was complete —the whole area laid off like an immense landscape garden in the midst of which the civic center gleamed like a mirage of some lovely village in

A CORNER GARDEN, RANCHO SANTA FE
Requa and Jackson, Architects

the Pyrenees—were those who sought to build country homes there encouraged to proceed.

Messrs. Requa & Jackson of San Diego were chosen as architects for the project because of experience and special training for the type of architecture selected. Mr. Richard S. Requa, in specializing for Spanish design, traveled through many Latin countries and studied many an unfrequented street and picturesque Spanish village. Both Mr. Requa and Mr. Jackson are students of Aztec-Hopi Indian influence on Spanish architecture. The remodelling of Ojai, one of the most interesting architectural achievements in California, is one of their successes.

These architects were commissioned to design all buildings of the civic center group, thereby establishing a standard for other structures which soon will crown commanding sites in the landscape. All home designs must meet with their approval, so far as exteriors are concerned, so that an ever harmonious picture may be seen whichever way one looks in a region with a thousand beautiful, inspiring and even thrilling views.

LOUNGING ROOM, GUEST HOUSE, RANCHO SANTA FE, DEL MAR
REQUA AND JACKSON, ARCHITECTS

The old adobe mansion of Don Juan, with walls three feet thick, cool and inviting and reposing serenely under the shade of giant pepper trees with an air of solid and substantial hospitality after three-quarters of a century, convinced the architects that adobe was the structural material best suited.

The first building erected was La Morada ("the home")—the guest house of the project. The substantial and restful simplicity of its design expresses eloquently the charming Latin note dominating the type of architecture to prevail. Its broad hospitable terrace invites, its wide doors and windows give it a friendly openness.

Inside, although there is every modern comfort, the atmosphere of old Spain is maintained. One enters a charming room. At one end a Spanish balcony and broad arches suggest "los portales"; in the other end is a large friendly fireplace. The decorative fineness of the entire room lies in the exquisite simplicity of proportions and in the velvety texture of the walls. No pictures are on the walls and they would be out of place there; but every window frames a picture of exquisite beauty.

Not far from the guest house, like a busy village near the great folk's chateau in the Pyrenees, are quaint shops and offices, and across the plaza from them, splendidly expressing the refined educational and social activities of the community, will soon arise the master building of the group—an inspiring, spacious structure, accommodating all school grades, high school and civic auditorium.

Not even a gas station in this "perfectly planned" project may be inartistic or offensive to the eyes. This adjunct to the garage group looks like a quaint old village well, around which native flowers grow, and it probably is the only filling station in America that speeding motorists halt their cars merely to look at and admire. The shops are so softened by true Spanish feeling that the commonplace of commercialism is disguised.

The restrictions provide that each of the 400 tract buyers in Rancho Santa Fe, whether his tract be small or large, must build a home to fulfil the requirements. Restrictions range from five thousand to fifteen thousand dollars. Many of the tracts have been purchased by eastern or northern business men and bankers who will engage expert superintendents for the development of their model orchards. That means that eventually considerably more than the 400 homes originally provided for must be built, and caretakers' residences, no less than those of owners, must bear out the idea of beauty and harmony. Garages and all service buildings must meet the restrictions.

It is an interesting fact that the architectural restrictions are attracting quite as many people to Rancho Santa Fe as are the demonstrations of conditions ideally suited to the culture of sub-tropic fruits. Already nearly half of the great park has been bought and is being developed by people eager to fulfil all the restrictions, eager to help build up an ideal—eager, in short, to do their part toward making Rancho Santa Fe the most beautiful and artistically harmonious area of its size in the world. That ought to be enough to teach other community planners and developers the importance and feasibility of architectural supervision for an entire community.

* * * *

The disinclination of boys to become apprenticed as bricklayers is said to be causing concern in the building trade. We can only conclude that a career of leisure has no attraction for our young hustlers.—Punch (London).

FOX THEATRE, OAKLAND, CALIFORNIA
WEEKS & DAY, ARCHITECTS

The Fox Theatre, Oakland*

By IRVING F. MORROW

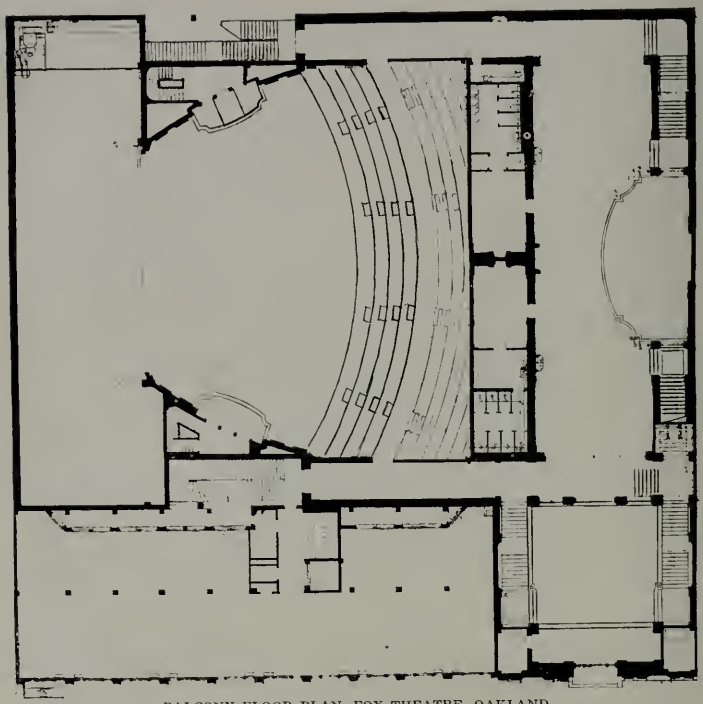
SOMEDAY I shall write an article on architectural photography. This, being a matter in which I have had no personal experience, offers a subject on which I could discourse with unabated conviction. (Is not detachment necessary for an unprejudiced view?)

But if I have never come to personal encounter with the numerous difficulties besetting the path of the photographer of architectural subjects, I have often pondered on the not uncommon insufficiency of results as compared with reality in the case of buildings I admire. I rarely sit down to write an architectural review without an impulse to offer some apology or explanation or extenuation for at least some of the pictures illustrating it; an impulse which on more than one occasion I have been unable to suppress. It appears that photography, like every other human activity, comes to acquire a recognized technique in its own name, quite apart from its relation to the ostensible purpose served by the result. A picture may be photographically impeccable, but quite futile from the architectural point of view. I have seen many a one which was made with exactly the right exposure through exactly the right lens on exactly the right plate, and subsequently printed in exactly the right manner on exactly the right paper, a sum of virtues which should approximate technical excellence; and yet the picture was considerably deficient because of a trifling failure to point the lens in the right direction. But postulating ample technical ability and intelligence on the part of the manipulator, I still consider it worth while now and then to sound the reminder that photography — at least commercial photography—is largely mechanical and not as impeccably exact as commonly assumed. We are too apt to take the pretentions of mechanical processes of reproduction uncritically at their face value. We accept the performance of phonograph record and player piano as unimpeachable duplicates of personal performance; which, even in their most admirable manifestations they most certainly are not. The photograph enjoys a like, but equally unwarranted, ascription of entire adequacy. A photograph may be photographically unexceptionable, even meritorious, and yet quite fail to convey a true conception of the subject. Sometimes this is due to rather subtle deviations of the angle of the lens from the normal angle of vision; sometimes to the slightest variation in relative values; sometimes to the mere loss of color, for which the camera cannot instinctively compensate as can the artist in black and white. But whatever the cause, it is well to stop and remember now and then that the fact is general.

I am moved to these reflections because of the conviction that the photographs of Messrs. Weeks and Day's Fox theatre at Oakland cannot begin to convey to the reader who has not seen the building, the impressions that arise on personal inspection. I say this is no spirit of mere captiousness toward the pictures; form, color and light have all conspired to make the problem one of the greatest difficulty. Nor do I do so merely to set Messrs. Weeks and Day in the best light before readers, however much this disinterested motive may be present. I am speaking, I admit, partly in self-defense, in order to justify a personal enthusiasm which might otherwise seem to some degree unaccountable.

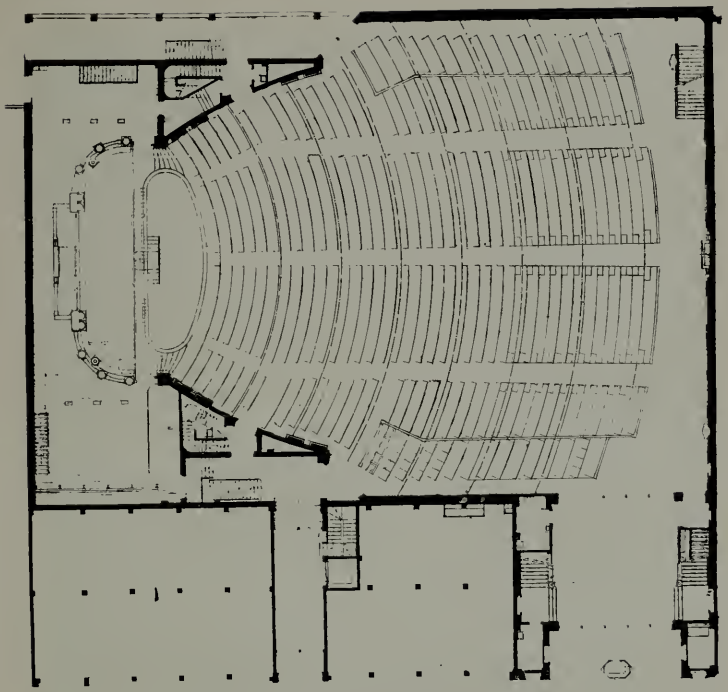
For, as a matter of fact, I regard the Fox theatre as one of the most successful examples of theatre architecture in northern California. In-

*Additional illustrations of the Fox theatre appeared in an article on the work of Weeks & Day in The Architect and Engineer for July, 1923, pp. 69-75.



BALCONY FLOOR PLAN, FOX THEATRE, OAKLAND
Weeks & Day, Architects

deed, it will hold its own with any building I know on the Pacific Coast of equal size and pretention. It attracts from two points of view. As a critic concerned with architecture as a living art, I am interested in the fundamental manner in which the architects have envisaged their problem. In a stylistic sense (which is the small sense) the building is not new. There is no attempt to devise a new system of ornamentation, nor to insinuate a specious novelty through exhuming a system which is merely currently unfamiliar. The building is none the less original, because its architectural structure and form have been conceived with entire freshness of vision and independence, out of the practical and moral conditions surrounding and conditioning the problem. (I should say, in passing, that I am speaking throughout more particularly of the interior than of the exterior, which I regard as no more than adequate.) To use an expression often misused and disunderstood, the planning is good. I do not use the term with the familiar academic connotation of a pretty paper pattern, but to indicate that the parts are well arranged with reference to their use, and to their effect, either when one is at rest or in progress through the building.



MAIN FLOOR PLAN, FOX THEATRE, OAKLAND
Weeks & Day, Architects

On the purely decorative side, the building is equally noteworthy. The decorative elements, as I said, are not new. For all I know, they may have been assiduously adapted from the "best examples" out of the numerous books obtainable on French architecture. But the effect is one of uniqueness because they are logically and beautifully applied to an architectural scheme whose bones represent a real and valid composition. The handling of ornament is almost uniformly successful. Its composition and placing are finely considered, the scale is right, the modeling is beautiful and of just the correct relief for the effect desired in each case. This would imply a wide variety of handling, from the summit of the main facade to the details of the ladies' retiring room; and, in fact, I believe at no point have effects of scale and relief been noticeably miscalculated.

But the theatre's greatest glory and the architects' most conspicuous achievement is perhaps the handling of the color. The whole interior, except for the Caen stone walls of the high entrance lobby, is treated in full polychrome, with materials, fabrics and painting all impressed into service. I know of no building among us which combines equal richness and harmony. Brilliant colors handled timidly and sporadically produce

FOX THEATRE, OAKLAND, CALIFORNIA
WEEKS & DAY, ARCHITECTS

irritation. Handled with assurance and consistency, the result of the highest coloring may be one of dignity and repose; and this result has been achieved here. The gorgeous red and blue ceiling over the stone walled entrance lobby, as well as its richly colored and textured floor, strike the note in a convincing and truly impressive manner; and thereafter there is no lapse from the exacting standard set. All parts are

FOX THEATRE, OAKLAND, CALIFORNIA
WEEKS & DAY, ARCHITECTS

finished, and consistently finished. One has no misgivings that a glance to the side or rear is playing unfairly with the architects.

A theatre should be joyous; a monumental theatre not undignified. It should leave the patron neither apathetic nor restless. This one achieves such a result. In fact, a visit here is more than ample compensation for the average moving picture entertainment.

MAIN FLOOR FOYER, FOX THEATRE, OAKLAND, CALIFORNIA
WEEKS & DAY, ARCHITECTS

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PROSCENIUM, FOX THEATRE, OAKLAND, CALIFORNIA
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LADIES' REST ROOM

MEN'S SMOKING ROOM, FOX THEATRE, OAKLAND
Weeks & Day, Architects

HADRIAN'S TOMB AND ST. PETERS
Vatican buildings to the left

From the Lakes to Naples

The Wanderer's Note Book

By E. N. KIERULFF, R. S. M.

DROPPING swiftly down from the St. Gothard, through a long valley, while still in Switzerland one observes the beginning of things Italian. The houses of stucco with tile roofs and pink walls, and the groves of olives and little patches of vineyard on the hillsides; at the Lago Lugano all becomes Italian except the money. Lugano the town at the western end of the lake, built upon a curving shore line and climbing up the steep slope behind, is as lovely a bit of soft coloring on a fall day as any traveler might seek. A few wooden houses, but they are scarce; stone and stucco, long windows and balconies and tall queerly shaped chimneys have altogether taken the place of the snug, tiny windowed Swiss houses. A lazy, quiet dreamy town, it casts a spell upon the new arrival, preparing him for the greater enjoyment and study of the Italy that begins with tomorrow morning's trip down the cool lake to Porlezza.

Here is the true frontier-a cluster of houses at the extreme eastern end of the lake; and before the little dingy puffing train bears the traveler away he turns for a last look at the mountains of Switzerland tinged pink and gold in the early sunshine and then sets out for that best known and most spoken of—gem of all the Italian lakes, Como—though to me Maggiore is no wit less lovely. An hour from Porlezza and the train drops down from the crest of a range and Como is spread out below, shimmering, a great pale tourquoise. At Menaggio one lunches and takes the boat, and from noon until evening shadows are slanting across water and hills, villas and gardens, is treated to so much of beauty and incomparable charm that the head must swim at what the eyes must constantly feast upon. A tiny town there, a group of colored dwellings fronting a beach, over there a short way upon that point, rise walls

HADRIAN'S TOMB AND THE TIBER, ROME

CATHEDRAL OF ST. MARCO (ST. MARKS), VENICE

TWILIGHT IN VENICE
Facade of the Doges Palace, the Piazzeta and Santa Maria Del Salute in the distance

COURTYARD AND STAIRWAY, DOGES PALACE, VENICE

flanked by cedars, a glimpse of a tiled roof and balconies; windows thrown open to the soft air, a path lined with blue-black cypress, broken by flights of marble steps and here and there the gleam of rich white old garden pieces—perhaps a fountain, a sun dial, a bench all lichen covered; one has these things all afternoon from Menaggio to Como Porto, each exceeding the other in charm and color. Como Porto is dirty and dusty, but withal has much to recommend it; a church with a very rich facade, interesting streets and in the environs some villas with very fine gardens. From Como Porto over land to Luino on the Lago Maggiore the trip is a trifle tiring, being made by tramcar over tracks of no uncertain evenness, but bits of the hilly countryside prove of interest, especially the narrow valley just before arrival at Luino. I had the good fortune to go down Maggiore on a cloudless afternoon with the

THE CATHEDRAL OF MILAN
Note detail and delicacy of carvings

shores softened by a faint haze and under a sun of almost copper hue, which ensemble lent an air of distance to things close at hand, and set over all a brooding softness and a great peace. The Iles des Borromes were like phantom ships stealing out of a lonely harbor at sundown, and as we neared Pallanza lights were twinkling along the shore and far up on the slopes of the hills. Early morning was a revelation, for under a mask of changing tones it showed a lake of clearest blue with a sky of fine white clouds.

Across the lake to Stresa and thence via the Simplon line to Milan takes the better part of the afternoon. Milan is too commercial to be one of the beautiful Italian cities, but it is well laid out and contains a few treasures that as long as they remain will draw people and their just admiration. The Cathedral is stately and of magnificent proportions, its facade adorned with numerous figures and boasting one of the finest pairs of bronze doors in Europe. The interior, dim, lofty and tranquil with fine old stained glass and columns, is a splendid composition; different from the cathedrals of France and Germany it is most

pleasing, and its very difference makes it more interesting to those who know the other churches and have studied them systematically. The treasure of all Milan however, is sheltered in a tiny church with a cloistered garden near the outskirts of the city, and it is here that every traveler comes to see and to go away richer for that sight—occupying a long end wall in one of the chapels, fast fading and damaged, yet holding something so sublime, so simple, yet so powerful—the world-famed "Last Supper," by Leonardo da Vinci; and so as it often happens, one of the world treasures is found in this unadorned simple little church of Santa Maria Della Grazi, with its drowsy garden shut in by arcaded cloisters.

On a bright, warm day I went south from Milan through a charming countryside, past old walled towns, each with its church and cam-

THE CATHEDRAL OF MILAN
An interesting view from across the housetops

panille, its gates and battlements, and caught glimpses of straggling streets and squalid little houses. The haze of late afternoon was settling as the train crossed an expanse of marsh land, rumbled over a long causeway and under a grey train shed, out of this—into—at last, the city of dreams, the "City of Beautiful Nonsense"; all my life I had waited for this moment. I approached with fear and trembling, was I to be disappointed? Was it to fall flat? I waited, my gondola edged out from a tiny side canal into the full glory that is Venice at sundown, with shadows falling on old palaces, the last rays of the sun slanting across the dome of the Salute, and far away the banks of the Lido misty in blue heat haze. There was no disappointment, it was the Venice of all my dreams, with all its richness, its color, its rare old charm, and later when I stood in the square of San Marco, dim now in twilight, under the tall shaft of the campanille, with the dark mass of St. Mark's and the Palace of the Doges stark against a blue-black sky, I was too utterly happy to be thankful that I had found the city of dreams and that Venice had received me thus. Of the beauties and charm of

CAPRI, BAY OF NAPLES

LUGANO AND THE LAGO LUGANO

the church of St. Mark and of the palace of the Doges I shall say little here; nearly every one is familiar with them either through the medium of prints or books, or actual sight; their richness, the utter beauty of mosaics and paintings, of arched and vaulted rooms defies, I think, description. But of the little side canals of the houses with gardens and walls with carved balconies and marble landing stairs, of these I may speak for their charms are reserved for him who goes away from the Grand Hotel, the plaza and the grand canal. Go by foot, and it can be done—the whole city may be crossed by means of small bridges—to see these treasures which are merely the every day homes of every day people, peer into some little garden, steal into a dark forbidding looking doorway to find a courtyard, that the painter and the architect search all day to find and once found haunt it for weeks and guard it jealously.

The time of departure came and reluctantly I turned away from Venice feeling that I had not done it justice, but my time was becoming short and other places were beckoning; so the fast express bore me away to Florence. This, the art center of the world, has far too much for one to see in a short visit and besides has been the rendezvous of so many writers I fear my poor description would fall very short. It is a city which holds a treasure in almost every street and it demands time and thought upon the part of those who would see these properly. To see more than one gallery, or at the most two a day is a fatal mistake, for the human mind can absorb only so much at a time; where one good museum or gallery is seen in a morning the afternoon were better spent in the open, and here it is the life and the color of the city is to be found; a keen pleasure and no end of interesting things may be found by reading or sketching some afternoon in the court yard of the Bargello or under the arcades along the Arno, and the passing people, form an ever changing colorful picture. A morning spent in viewing the exterior of the Duomo, the Campanille of Giotto, and the exquisite detail of the Paradise Doors better prepares one for the greater enjoyment of the interiors in the afternoon. Some day when the very warmth of the sun and the blue of the sky almost forbids of staying indoors a carriage taken to Fiesole will a thousand times repay; the white road winds up steep green slopes, passed walled villas with gardens a riot of blossoms amidst the softer grey-green of olive trees and gnarled old figs. There is a Romanesque church at Fiesole, one of the oldest of its type, adhering altogether to the true Romanseque and they are rather scarce. Inside and out it betrays its age in the softness of the coloring of walls and pillars which can come only with years of rain and sun. It is these days—these little jaunts away from the heart of the city that bring a true love of Florence and of the old and beautiful in the Italian cities. One regrets sincerely the hour that the train draws out and leaves the domes and spires shimmering in the mauve haze of some autumn day.

I think that there is no lovelier hour to arrive in Rome than the lazy hour just preceding tea time when the sun is full in the west; as you roll along in your open taxi on the way to your hotel, you catch a glimpse of the Corso Vitterio Emanuell, that busiest of Rome's thoroughfares, sweeping in a gentle curve past the great, white monument of Italy's Unknown Soldier; next between those tall houses you see for an instant the dome of St. Peters and the sulky mass of the Castle of St. Angelo, that seems to keep vigil beside the Tiber over all of Rome. If by chance you have chosen your hotel wisely it will be near the Borghese Gardens, where a short walk in the early morning light or at twilight, will show you the city at her best. These gardens offer one of the most

DETAIL OVER GATEWAY TO COURTYARD OF THE DOGES PALACE, VENICE

LOOKING EAST ACROSS LAGO COMO

THE BARGELLO, FLORENCE

THE LOGGIA, FLORENCE

charming places to spend leisure time and to gain a knowledge of the landscape of public parks that I know of; particularly as no formal gardens are to be found, yet all is laid out with a nicety of arrangement that is equalled only by Golden Gate Park in San Francisco. Long avenues of cedars, paths bordered by low hedges, small knolls covered with oaks and lichened rocks, altogether make up one of the finest public gardens in the world. The zoological garden deserves mention for its arrangement, there being few cages, the animals kept in bounds only by deep moats, so that one sees royal Bengals and stately lions regarding him from some small hillock dotted with stunted oaks and great bare rocks, giving to the whole, the surroundings' true appearance of the most natural; the animals are healthy, keep themselves clean and the whole is free from that peculiar odor found in most zoos where the animals are closely confined.

A weekday morning as early as possible is the best time to visit St Peters; few are about and the great cathedral is quiet. A visit at this time gives freedom from passing people, the chance of finding the

FORUM ROMANUM, ROME

chapels empty and the whole morning is made more interesting and pleasurable by having it all to oneself, as in all great churches, the more sunny the day the better the tones of stained glass are brought out, the easier the texture of tapestries is seen and all the stone and marble work is softer and warmer. St. Peters demands more than one visit to realize the majesty, the harmony and the sheer grandeur of it, but never two visits the same day or even succeeding days. Seen on a sunlit morning when shafts of golden light are slanting down, across the great rotunda, and every bit of marble has life and warmth, when the mosaics glitter and are reflected, is a picture that dwells in the mind long after Rome is left behind. One other of the vast number of churches in Rome has given to me a picture that I carry about in my mind and from which I receive more than my share of pleasure; it may be because I am

partial to gardens and to walled gardens in particular, and it boasts one of the loveliest cloistered gardens I have seen; the cloisters borne by twisted columns, delicate and slender, an old well-head set in the center and over all is set a great peace, broken only by the chimes calling the hours, an old church and very beautiful St. John of Lantern.

Of the ancient ruins I can say but little—they are immortalized in song, in poem and in history; to me they seemed always to be brooding, not dead things of a dead age but only sleeping things, not centuries old, but old only in the lights and shadows of some yesterday. The masses of fallen stone, that had seen Rome in her eternal glory, had watched the Caesars come and pass, had seen the dignity of the Senate and the State they were not dead, merely asleep, crooned by the lull of the soft little winds that beat up from the south. After seeing Rome intimately, go for your last view of her to some high place and look across the entire city, catch the thrill that comes with sight of sunlight or moonlight on many domes and spires, on gentle hills crowned with the temples and palaces of yesterday, watching over the marts and avenues, churches and monuments of today. The tip most top of Hadrians Tomb or the summit of the Palatine Hill will give you these things and you will carry away to other places lingering, colorful and lovely pictures of the Eternal City.

One of the most enjoyable railway journeys in Central Italy, I consider to be the trip from Rome south to Naples, through long green valleys and past charming small towns in the farming districts. Probably the most fascinating hour for arrival in Naples is after dark. On a clear night you can catch the glow of Vesuvius, the long sweep of lights around the arc of the bay and far out dead ahead in the east the twinkle of a few scattered lights on Capri; you awaken to your first day with the memory of a sunrise over the incomparable bay and all Naples is laid out at your feet—that is if you have selected a hotel high on the hills, for it is here only that the full beauty and majesty of the city, the bay and the curving shore that sweeps away almost out of sight may be enjoyed and appreciated at early morn, at noon and at the mystery hour—twilight. The cathedral in Naples is an interesting type, similar to the Pantheon in Rome—a huge dome, a great circular room and small radiating chapels. The aquarium, so justly famous, demands time and thought and is worth more than one or two visits. It is surpassed possibly by the one at Honolulu, which boasts the most startling collection of tropical fish in the world, but at Naples are seen the fauna and flora of the deep Mediterranean besides fish from nearly all the seven seas. The famous palace, which has been made into a royal gallery, is unique and marvelous and one may easily spend some days in carefully going over its rooms and their treasures. Of Pompei I shall say little. It must be seen, must be gone over foot by foot to be known and it demands thought and time, suffice that from it we learn something of those who built it, something of architecture and house planning, of construction and arrangement. One could scarcely believe that the houses were heated with steam by the most ingenious of methods; a large stone tank beneath the floors contained water which was heated by hot stones or by fires built directly under the tank, the only vent for the steam being up the inside of the walls through hollow tiles, thus warming the walls of each apartment. Two days of delightful vistas of blue water, lovely gardens and a great sense of restfulness are the reward of those who

make the journey to Amalfi, Sorrento and across the narrow strip of sea to Capri, a garden spot of this entire coast.

When one's Italian travels are coming to an end, and as the train is speeding away from Genoa towards Nice and the French Rivera, then is the time that one looks back on the country and the towns, the cities and the gardens and is so thankful that, despite the warnings of one's friends, or the tales without foundation of dirt and inconveniences, one has given the time and the study and is taking away such vivid and lasting pictures of so much that is harmonious, beautiful and full of rare charm. For the color and delight of things Italian in Italy will be longest to remain, and the last to fade of all the pictures I have carried away in my mind.

* * * *

Ventilation of Garages in Building Basements

PRESENT day practice seems to be tending toward the construction of garages in the basements of office buildings and large apartment houses, and this opens up a new problem in ventilation. A new code is in preparation in Washington, D. C., which will probably embody requirements in the way of ventilation for basement garages.

In response to a request by Albert L. Harris, municipal architect for the District of Columbia, who is also chairman of a board which is preparing this new building code, the following views have been expressed on the subject by Nelson S. Thompson, chief engineer, Office of Supervising Architect, Treasury Department:

"My idea of the proposition is that the dangers to be anticipated from so constructing garages have been greatly exaggerated, especially from the standpoint of ventilation. This being a new departure in the engineering field, those taking the first steps are inclined to overrate the difficulties of the problem, and in order to keep themselves safe and above criticism are very apt to go to unnecessary expense in the matter of installing fans and other apparatus.

"An office building in a city is of necessity a high building, and, being high, is a natural chimney, with a tendency to pump the air from the lower floors into the upper floors by the action of gravity and the operation of elevators, etc., so that above a certain neutral zone in the building the air escapes outward. I have tested the air many times in such buildings, and found that the flow of air was from the basement doors in, and then, with leakage from the outside to the inside, the air flowed upward to somewhere about midheight of the building, where a neutral zone existed. Above this neutral the tendency was to flow outward, this tendency increasing with the height.

"Under these conditions it is obvious that to prevent the fumes from the garage in the basement from issuing into the occupied portion of the building it will be absolutely necessary to seal off, as far as possible, all points of ingress for the air from the basement portion. There should be no stairway leading down from the interior of the building to the basement garage space, unless it is cut off absolutely.

"Thus, if you have to have a stairway down to the garage, my idea would be to have an open entrance vestibule with storm-doors leading into the first floor, for ingress to the upper floors of the building, and a stairway leading from this open vestibule down into the basement garage, this stairway to be closed in and having self-closing doors to prevent as much as possible the fouling of the air in the open entrance area. In fact, I do not see why a stairway is necessary at all.

"In spite of the fact that, as stated by Professor Yandell Henderson, professor of applied physiology at Yale College, the blood has power to absorb three or four hundred times the amount of carbon monoxide that it will absorb of oxygen, and that when the blood is fairly well saturated with carbon monoxide he does not know how long it would take under natural conditions for it to oxidize out, I feel that the means which have been outlined by engineers for taking care of this new problem of garage construction have gone to unnecessary refinement.

"It would nevertheless be the part of wisdom, until the real practical facts have been worked out, to introduce into the building code some regulations governing the ventilation of these spaces, with the distinct statement that they are purely tentative and subject to amendment upon the development of further knowledge concerning the matter. I think the following requirements are basic:

"First—I would insist that from these basement garage spaces there should be led at least two large ventilating flues, air tight in construction, up into the attic space, where they should be connected to a multiblade fan discharging outboard. No other connections to these fans should be permitted. The area of the shafts should be based upon changing the air not less than six times per hour at a speed of not to exceed 1,000 feet per minute in the shaft.

"The fans should be absolutely standard, with standard control, motor-driven, and hand-controlled. If desired, they might be provided with remote control, so that they could be stopped and started from the garage in the basement. The idea of having two or more fans, one steam-driven and one electric-driven, with a number of automatic devices to come into play under purely theoretical conditions, seems to me to be unnecessary.

"Second—I also think that fully 90 per cent of the extensive air ducts used in the schemes to date to distribute the air throughout these garage spaces are unnecessary, both as air flues and vent flues. Until we get further information on the proposition, I suggest that the tentative code be (and that it be frankly tentative) that these spaces shall be provided with fresh-air fans at a sufficient number of points, discharging air at or near the floor level, to insure the sweeping out of carbon monoxide gas, on the principle of about six changes of air per hour in the garage.

"The two or more ventilating shafts referred to previously should be provided at or near the ceiling of the garage with wire grilles.

"I have an idea that after observation on one or two of these basement garages, the whole proposition of ventilation will be handled by the installation in one or two of the basement windows of the ordinary reversible-type propeller fans for the introduction or discharge of air, probably supplemented by one or two generous vent flues, leading up to a vent in the attic to overcome the chimney effect of the building, in event of any failure to properly seal the basement off from the upper portion of the building.

"No matter what scheme is adopted, it certainly will be incumbent on the owners of the buildings to devise drastic rules for the guidance of the automobile owners in regard to bringing their cars in properly without smoke or the undue production of carbon monoxide, and leaving the garage without the usual machine-gun firing that we expect to hear about the time we are trying to get to sleep, and the consequent discharge of a lot of unburned or partially-burned gas. They should be re-

quired to learn to operate their machines quietly and with proper combustion.

"About 90 per cent of car drivers are incompetent to run a gas engine, so far as the proper burning of gas is concerned; but if proper rules are enforced the ventilation will be comparatively simple.

"We must always keep in mind in this connection the effect of gravity, which works all the time."

* * * *

Brick Laying Now Costs Five Cents a Brick

According to a recent survey of brick laying and its different phases, the price of placing each brick in a wall in a new building, has been fixed at approximately five cents. Here are the figures: Common brick cost contractors $18 a thousand. Mortar costs between $5 and $6 for each 1,000 bricks. The bricklayer's helper gets $5 a day. The bricklayer himself gets between $11 and $13.50 a day, depending upon how much bonus the contractor has to pay to get him to work. This would make the cost of laying 1,000 bricks, supposing the bricklayer handled that number a day, at the lowest estimate $39 and at the highest, $42.50. However, contractors say, the average bricklayer nowadays places only 600 bricks a day. It costs, therefore, to lay a thousand bricks somewhere between $49.66 and $53.08, or about 5 cents each. When face bricks are being laid, upon which the workman must exercise care, the cost is more.

Before the war, contractors assert, it was nothing uncommon for bricklayers to place between 1,500 and 2,000 bricks a day. They now work nearly the year round. Allowing for a layoff of 12 weeks because of inclement weather, they earn $2,800 annually at the present scale of wages. Production now per man is about 40 per cent of what it was before the war, according to the contractors. But even with this era of high wages and small output, they say bricklayers are hard to find, due to the many restrictions put upon apprentices by union labor. It is declared that the shortage is so acute that upon $250,000 jobs, where ordinarily 30 or 40 bricklayers would be employed, only six or eight are working.—Digest of Organization Activities.

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Future Generations to See American Architecture as it is Today

Their descendants quite likely will not recognize them, but certain Americans identified with the building industry are due to stage a comeback to this earth 5,000 years from now. They will not return exactly in person, as it were—only their shadow selves will re-appear in 6924, but they will look virtually just as natural as they did in 1924. The comeback will be staged via the motion picture screen.

Scenes from a number of building pictures will be included in the collection which Watterson R. Rothacker is preparing to present to the Smithsonian Institute for preservation to posterity. These scenes will be taken from movies which the Rothacker Film Company has made in the past visualizing various phases of the industry—architecture, engineering, construction, lumber, cement and even the furniture that goes inside the finished building. The scenes will be selected with a view to giving people centuries hence a comprehensive picture of the building industry early in the Twentieth Century. The shadow images of several hundred different workers identified with the industry will be included.

FIG. 1—CURVED ARCH BRIDGE, NEAR SCHENECTADY, NEW YORK
Structure is 4436 feet long and will cost $3,000,000

First Curved Concrete Arch Bridge

By JOHN J. BURCH

THE first concrete arch ever constructed on a curve is a feature of the Great Western Gateway bridge under construction at Schenectady, New York. According to engineering authority this arch is considered a freak in concrete construction.

Figure 1 is a view taken from the Schenectady side showing the curve. The bridge crosses a branch of the Mohawk at right angles; then curves decidedly to the right; runs across a large island; crosses the main river, which is the New York State Barge Canal; crosses another island, then another branch of the Mohawk to the Scotia approach. The view shows about one-fourth of the total length of the structure. After the curve, the line of direction is perfectly straight. The large pier at the right of the photograph is the end of the Schenectady approach.

Figure 2 shows a view taken under the curved arch. The forms are still in place, showing the details of the construction. The wooden truss which is seen is removed after the concrete has hardened and used in constructing the next arch.

Figure 3 shows the top of the curved arch. From Figure 1 it will be noted that the other arches are composed of three concrete trusses, while the truss of the curved arch is solid, to give added strength and stability From Figure 3 the reinforcements can be seen. The photograph also gives an idea of the width of the bridge. The roadway will be 40 feet wide, flanked on both sides by sidewalks 6 feet wide. These, together with the railings, will make the structure about 55 feet in total width.

FIG. 2—VIEW TAKEN UNDER CURVED ARCH, BRIDGE AT SCHENECTADY, NEW YORK

FIG. 3 SHOWING TOP OF CURVED ARCH, BRIDGE AT SCHENECTADY, NEW YORK

When completed, this will be the longest highway bridge in Northern New York, being exceeded in length only by the four bridges at New York City. The total length will be 4436 feet, but of this 260 feet will be approaches, leaving the actual length of the bridge 4176 feet.

It is estimated that the total cost will be upwards of $3,000,000, and that the structure will be completed in the fall of the current year.

* * * *

Story Heights for Garages

WHAT is the minimum story height that will be satisfactory for a multi-story garage? Architects and owners pondering over this question should find the following information of value:

Garages may be erected to serve three purposes—for passenger car storage, truck storage, or as a service station. The minimum clear headroom necessary for the different types of garages is as follows:

1. Passenger car storage, 8 feet.
2. Truck storage, 13½ feet.
3. Sales and service, 12 feet.

Allowing 2 feet in each case for the thickness of the floor, depth of the beams, and such features as steam pipes, sprinkler system and lighting system, the figures for story heights, from finished floor to finished floor, become:

1. Passenger car storage, 8 feet.
2. Truck storage, 15½ feet.
3. Sales and service, 14 feet.

In efficient modern multi-story garages which house either passenger cars or trucks, it is not necessary to provide more than the minimum clearance. Service stations, however, require more headroom because in some cases monorail hoist systems are specified and in others, arrangements for suspending the car bodies from the ceiling must be provided for. Allowing 12 feet in the clear should provide sufficient headroom for these features.

Showrooms, as a rule, should have higher ceilings than the rest of the building because of appearance to the prospective buyer. A high ceiling with large luxurious columns has a psychological effect.

* * * *

How Soon Will Wall Plaster Dry?

THE U. S. Bureau of Standards receives numerous inquiries as to when plaster can be painted safely. A careful study of this subject led to the conclusion that plaster can be painted safely when dry. The next question is how long does it take plaster to dry? This is of importance, not only as regards painting, but also in the erection of wood trim, and because of its effect on the general speeding up of construction.

A slow-drying plaster may cause financial loss to the contractor because of delay in completing the work, and it may cause loss of occupancy to the owner. Plans have therefore been made to measure the relative rates of drying of different kinds of plaster under different atmospheric conditions. The equipment necessary for this research has been designed, and is now being made in the bureau's shop.

* * * *

Only half of the voters vote, and generally the wrong half.—American Lumberman.

OFFICE BUILDING AND WAREHOUSE, SAN FRANCISCO
BAUMANN AND JOSE, ARCHITECT AND ENGINEER

Electricity in Home Heating

By O. H. BATHGATE in Heating and Ventilating Magazine

FAR back in the ages, perhaps a thousand centuries or more, primitive man, little more than an animal himself, fought with nature and the savage beasts of his time for a mere existence, the privilege of living.

His first urgent need was for food. Hunger spurred his inventive genius to the creating of crude implements of destruction for the hunt. Then storms of his region, beating upon his unprotected body, compelled the erection of rude shelters and the making of rough clothes, fashioned from the skins of wild animals he had slain.

Protection from the elements must have been as great a problem as any that he faced in those truly strenuous times and while the rough shelters of stones and earth, branches of trees, etc., and the clothes of fur served as a measure of protection, especially to man living in the colder climates, how he must have longed for a more comfortable existence!

His first acquaintance with fire had nothing in it to inspire him nor to cause anything except a feeling of dread. Here was a flaming demon, unloosed by lightning or volcanic eruption that, time after time, destroyed his woodland home, that drove the game from his countryside and left naught but charred and blackened ruins. It was just another enemy to contend with and one whose power compelled a deep respect.

Details of his subsequent actions must ever be a matter of conjecture, a secret hidden by the lapse of time, yet we know that he eventually lost his fear of this new factor in his life and learned to control it.

Back to his tribe he carried his new found treasure and we can imagine the excitement and delight that must have prevailed. Here was a weapon that the fiercest animals of the forest feared—a weapon that would protect the tribe from its most dangerous foe. They slept close by it for protection at first and later for its cheery warmth. After a time they learned to use it in preparing food. This source of heat and light, this protector from savage beasts and cooker of foods soon became the most precious thing primitive man possessed—his greatest ally and friend.

No doubt the tribesmen wondered not a little at the magic sparks which would fly from the pieces of flint as they chipped them to make weapons, until the day when one of the sparks lit in the frayed and splintered wood of the chipping block, smouldered and then burst into flame. Here was their friend again—come out of the stones to light the fire and bring them comfort and protection.

As his weapons became better, man feared the animals less and less. He did not need the fire for protection so much as he needed it for cooking and for comfort. Now there was not so much dread of the long cold winter season. His home might be a cave, a hut or a tent, but whatever it was there was the fire in the center to warm it. However, the smoke from the open fire choked him at times and stung his eyeballs till the tears came. Again necessity and discomfort spurred his ingenuity. He learned that a hole in the top of the hut would let the smoke out. This was the first idea of a chimney. Later within his close winter quarters he felt that the fire in the center of the room

took up too much space. He built a pit of mud and stones against the wall and built a fire in it. He used a tube of branches plastered with mud to convey the smoke from the pit directly out through the hole in the roof. This was the first rude fireplace with a chimney, the counterpart in principle of the many fireplaces which have cheered homes ever since.

As our life today becomes more complex, we ask more and more of the men who make it possible to heat our homes. Primitive man had little to worry about after he mastered his greatest problem, **how to make the fire.** He cared little for appearance so long as the fire did his work. He was pleased if he had a chimney to take the smoke out of his hut. He never had to give a thought to the fuel he burned. There was always more in the forest and no bills to pay. What he wanted was H-E-A-T.

Heat is still the first demand and always will be as long as winter comes and men must produce with efficiency. But modern conditions call for more. First we asked for a method of heating that would not mar the appearance of our rooms. Then we asked for heat with greater comfort; now, with our forests devasted, the last word from the coal fields urges us to ask again and this time for heat with the greatest economy of fuel.

In order that the problem of domestic heating may receive its full share of consideration, attention may be called to the U. S. Government figures on the total coal consumption in the United States during the year 1918. This amount was 857,000,000 tons. With 16½ per cent of the total mined early being used for domestic purposes, the consumers expense for this fuel approaches one billion dollars. In addition to this direct-fired fuel cost, the constantly increasing domestic electric heating load is reaching enormous proportions, more especially in those sections of the country where hydraulically generated power rates are low and climatic conditions are comparatively temperate.

A summary of mean monthly atmospheric temperatures of four cities taken during the last fifty years indicates the relative extent so far as districts are concerned, to which consideration should be given to this kind of heating problem.

	Seattle Deg. F.	San Francisco Deg. F.	Los Angeles Deg. F.	Pittsburgh Deg. F.
January	40	50	54	31
February	42	51	56	31
March	45	53	57	40
April	50	54	60	51
May	55	55	62	62
June	59	57	65	71
July	64	57	70	75
August	64	58	71	73
September	59	59	69	66
October	52	58	65	55
November	46	56	61	43
December	42	51	55	34
Average	51	55	62	53

From the above table it is reasonable to conclude that the West Coast districts are from a climatic standpoint more fortunately located than Pittsburgh or other localities having wide variations in seasonal temperatures. It would seem that where the average monthly temperature difference exceeds 25 to 30 degrees, the application of electric

heat to the home will be limited to those of large financial means and possibly to some others who may wish to use electricity for auxiliary heating during the early fall and late spring.

Of the more numerous types of electric heaters now installed for home heating purposes, the following may be listed:

Radiant air heaters.
Convection air heaters.
Radiant convection air heaters.
Pipe and pipeless furnace heaters.
Conduction radiator heaters.
Induction type water heaters.

The radiant type air heaters include the 660-watt Cozy Glow type of heater to that of units as large as 6000 or 8000 watts. Its principle of heating is similar to that of the old type open fire place or more modern radiant fire gas type of heater. The electric heat application of this principle differs very little, if any, from that of the direct fuel fired heater.

The unit type convection air heater is one built along the lines of maximum air circulating principle with provision for the absorption of radiant heat by convection air currents passing over low temperature electric heating elements. Several designs of this type of heater are now being made in the city of Seattle, although I have never found any of these in service elsewhere in the States.

The radiant convection type of air heater is made of electric heating coils, operating at a temperature corresponding to a radiant glow and, in conjunction with this, provision in design allows air circulating current to move upwards past the heating elements, thereby effecting a distribution of a part of the dissipated heat to remote sections of the room.

For electric heating where only localized sections of a home are to be heated, at any one time, the combination radiant-convection air heater has the advantages of all the other types, combined. It is more durable and more endurable than the strictly radiant type. It operates at near maximum efficiency both as relative to heating and the distribution of heat. The nearest approach to this type of heater is manufactured and sold in large quantities in the San Francisco district.

The electrically-heated pipe and pipeless furnaces as developed, consist of the ordinary fuel fired warm air heating furnace, equipped with low temperature heating elements in space formerly occupied by combustion chamber. With air heating furnaces of this type, built with substantial heat insulated covering, the efficiency factor, the humidity and ventilation of the home and the simplicity of temperature control equipment all tend to make this kind of heating worthy of careful consideration. Where it is desired to have the entire home heated all or most of the time this kind of system has few disadvantages. The absence of any kind of heating apparatus in the rooms is a realization with this indirect convection air heating system.

The direct application of electric heating elements to steam or hot water radiators of the old standard type is used to a limited extent in certain localities but this practice necessitates objectionable control operating features that may more than offset its advantages.

The direct application of electric heat either in the form of a steel clad element or an induction type heater to home heating hot water or steam tanks located in the basement, is a system now in use to some

extent and is one not without merit. This kind of system must depend on the usual type of water or steam radiator for a medium of heat distribution in the rooms to be heated.

For control, the simplest kind of thermostatic equipment will function with even greater accuracy and more efficient results than can be obtained with any type of fuel-fire heating boiler.

The thermal storage principle involved and particularly adaptable to this type of heating system is one that the power companies soliciting load have not overlooked and on this account alone, the future for this type of electric house heating looks promising. During off-peak power loads on the power company's lines, clock-operated switches may be used on separate house heating lines which will permit raising the temperature of the water in the boiler to a maximum. This accumulation of thermal energy can be used for room heating when the family arises in the morning and again toward evening when the power load peak has returned.

It is with such possibilities as above mentioned, together with the continuous rising costs of coal and consistent decrease in cost of large blocks of power now being generated or under development in hydraulic systems, that we do not hesitate to predict that in a very few years electric home heating will be more common in large areas of the United States than any other type of heating systems.

Twenty-five millions of the total population of the United States live in climates such as are found in Seattle to San Diego and to Atlanta in the East, most of which country is largely served by water power or that generated from cheap oil. With a climate such as exists in Pennsylvania and New York, the average number of a season's heating hours is about 3,000. In the South and West the average at 900 may be considered unusually large. The relative intensity of heat demand in the two localities is around one to two or in other terms, the electricity required for heating a home during a season, is approximately one to ten for the Pacific Slope and Southern territory in comparison with locations such as Pittsburgh, Pa.

Having recognized the large differences in home heating demands in sections of the country where electricity can compete with other fuels on a heat unit cost basis, it is desirable to point out here the electric heating power possibilities, in those sections in which reliable data has been obtained.

In comparing home heating by coal and electricity, we may assume an average practical efficiency obtainable in either instance. If the operating labor factor for firing and handling ashes is entirely ignored, the operating cost for electric heat at one cent per kilowatt hour corresponds to a $16.00 per ton coal rate.

With a 350 B.T.U. gas at $1.25 per 1,000 cu. ft. which corresponds to some city gas rates in the northwest, a two-cent kilowatt hour electric rate is the equivalent for domestic heating.

In considering the application of heat to furnaces, ovens or homes, superficial comparisons are often made without considering relatively, the products to be heated, heating cycle, temperatures and designs of equipment by which the heat is applied. In this respect the value of a comparison of house heating equipments is of as little consequence as one of industrial furnaces that may operate at 1,000 to 5,000° F., where production factors do not permit with celerity, a direct comparison.

In considering electric home heating from a purely efficiency stand-

point, the type of heater, the kind of heating desired and the care exercised in operating the equipment are factors, vital to its success.

As an example of efficient electric home heating, I would recommend, from my experience of the art and knowledge based on actual operating data collected in the San Francisco Bay district, a combination radiant-convection type room air heater for each section of the building to be heated. The back of these heating units would be well thermally insulated so as to reduce the radiant heat into the walls to a minimum. The front and vertical plane of the heater would permit at least 75 per cent use of the convection principle of heat transfer to the room.

Manual or combination of manual—thermostatic control for each heater are practical methods in use in a large number of homes.

By operating a unit type heater system of this kind only during such times as the rooms are occupied, the power heating cost will be as low as is practical to obtain. The discomfort of intermittent room heating as thus recommended on account of efficiency, will with a little psychological cultivation, becomes almost negligible.

In the eleven Western states there is a possibility of developing 42,500,000 horsepower. Approximately 5 per cent of this total available has been developed and it has been estimated that another 2,500,000 horsepower will be put in service during the next ten years. It is reasonable to suppose, since this section of the country never will compare industrially with the East where raw materials are found in greater quantity—that large amounts of these blocks of power will be used for heating purposes and particularly for home heating where favorable conditions exist.

Most all of the Pacific Coast power companies are soliciting home heating load and have prepared or are preparing to fix their rates to attract the consumer.

The rates at present vary widely in different localities, the minimum for any large municipality being around one-half cent per kilowatt hour.

During the coldest month of the winter 1921-1922 in the San Francisco district, the following data were obtained. The kilowatt hour figures include power used for heating water for domestic service and electric air heaters for the rooms.

A 12-room home used 1760 K. W. H.
A 10-room home used 1450 K. W. H.
A 6-room home used 1110 K. W. H.
A 5-room home used 700 K. W. H.
A 12-room apartment used 5000 K. W. H.
A 10-room home in Los Angeles used 1700 K. W. H.
A 12-room apartment (2 and 3 rooms each apartment) located in Portland—monthly electrical bills for lighting, water heating, range and room heating are $5.09 min. and $12.69 max.

In Tacoma, Washington — electric home heating has become so popular, that a new home is not considered modern unless it is provided with full electrical equipment, including heat. The average home uses, each year, about $80.00 worth of heat, $45.00 worth of cooking and lighting current and $30.00 for water heating.

The house heating contracts in Tacoma for several years back are as follows: 1919-701; 1920-1356; 1921-2229. The residence light contracts during these same years were 1919-20859; 1920-22168; 1921-23688. In other words, the contracts for home heating during these

three years were more than 60 per cent of the additional contracts for home lighting.

For air heaters and ranges, the Tacoma contracts number 12,757 against 23,688 for residence lighting.

Present range, water heater and air heaters connected 30,000 K. W.

The homes heated electrically in the city of Seattle were in 1922-1978, which represented a phenomenal increase in the comparatively short period of its existence.

Some very extensive reports have been compiled on the subject of home heating electrically, but these now being several years old they are not based on modern practice and have just as little bearing on present day efficient practice as does the old reciprocating steam engine have to the modern low-pressure turbine.

Power companies located in sections of the country where electric home heating is and should be favorably considered are promoting installations in every way possible.

The general tendency of power rates is downward with the result of growth of water and air heating loads, seeming to indicate that this class of business will increase very rapidly in the next few years.

The canvass of households by one of the California power companies indicates that where one person is interested in an electric range, three are interested in obtaining at least a moderate amount of electric heat for rooms. Otherwise stated, the demand for room heaters will likely be very much larger than for ranges or water heaters, although in many instances, all three of these utensils will be installed.

The kilowatt hours sold in Seattle for domestic heat was in 1916—526,000 and in 1921—3,812,000, or an increase of 650 per cent in five years.

One more thought within the scope of this paper that has not as yet been referred to, is in connection with electric heat in the office, in large apartment buildings, in hotels, churches, theaters, studios, schools and other types of public buildings. No less than ten architects and heating engineers in Los Angeles and San Francisco, have expressed the opinion to me that where power rates were reasonably low, they were willing and would have little difficulty in incorporating modern electric heating equipment in designs of many different classes of buildings. They are already working out extensive plans along these lines and as a result, electric air heaters are now being sold extensively in lots of a few to several hundred per building for this class of service.

In considering the information in this report, it must be remembered that the facts are of practical origin based on electric home heating and its application in temperate climate where coal is high in price and hydraulic-electric power is low in price and of almost unlimited possibilities for extending the development.

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17,000,000 Autos in World.

Before the end of January, 1924, the world will have in operation 17,000,000 automobiles—passenger cars and trucks—according to an estimate by Mr. M. H. Hoepli, chief of the automobile division, U. S. Department of Commerce.

Of that total, he says, 14,000,000 will be running in the United States, or about one to every eight persons, whereas in the rest of the world the proportion will be about one to 112 persons.

The number of cars in operation is expected to show an increase of seventeen per cent over the same date a year ago.

City Planning and Housing

By CAROL ARONOVICI, Associate Editor

Regional Planning

By CAROL ARONOVICI
City Planning Consultant

EIGHTEEN years ago the Prime Minister and the President of the Local Government Board of England received a deputation of prominent citizens representing the National Housing and Town Planning Council, which placed before these high officials the outline of a national housing and town planning program. This program contained the first clear statement of the scope and necessity for regional planning, and it read in part as follows:

"A central commission, or a special department of the Local Government board with extensive powers as to land, housing and transit, should be established to consider the main condition of growth of the various districts in the country and, where the county or borough area is not suitable, to map out what may be called 'Scientific Areas', for each of which there should be subsequently established a statutory committee consisting as to a majority, of representatives of the local authorities, and, as to the remainder, of experts nominated by the Central Commission."

This was perhaps the first bold attempt to break through the artificial political boundaries of county and borough and to establish scientific areas as the normal unit for "the development of comprehensive and scientific planning."

Yielding to the fascination of the study of the history of city planning, I doubt whether we shall find a single example of regional planning. From the oldest example of town planning the City of Kahun, which was built to accomodate the workers employed in the building of the Illahun pyramid about 2500 B. C., and throughout the history of city planning of almost 4500 years we have no reliable evidence of regional planning beyond the extensive military plans involving mostly offensive expeditions of armed forces. There is, however, ample evidence of cities being planned in relation to the regions in which they are located.

So far we have used the term regional planning without definition, without outlining the scope and meaning, and without relating its value to modern conditions.

Scientists who have examined into the influence of geographic conditions as a factor in the distribution of population have found that the cities are born, grow, develop and decay according to fundamental natural laws. They have found that a city is the product of soil, climate, land contour, accessibility, and relation to water supply, food supply, raw matrials, etc. It is the child of its natural environment. The growth, progress and decay of cities can be measured by the efficiency and foresighted use made of this environment in serving the interests of the population living in these cities. **Regional planning is therefore the application of scientific principles to the utilization of the natural environment in the interest of cities and their surrounding territory, regardless of political boundaries.**

The assumption that municipalities, boroughs, counties, or even

states lines which had their inception in political intrigue, commercial or industrial competition, inadequate transportation, administrative convenience or legal difficulties, is obviously inadequate and out of date. The social and economic boundaries of a community should be determined by the units of social and economic efficiency and not by political expediency. Thus a city like New York is rapidly losing its identity as a self contained social and economic unit and spreading its interests, its field and possibilities of cooperative development and service beyond the boundaries of boroughs and State. About 200 governmental units, breaking through borough, county and State boundaries are now comprised within the scientific area of the metropolitan district. Similar conditions are to be found in Philadelphia, Chicago, Boston and other large cities.

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On the Pacific Coast, San Francisco Bay stands out as a natural center around which more than 20 municipalities of varying sizes are affiliated by the geographical conditions which make them interdependent by the very nature of their geographic location. Shall this interdependence find expression in the development of common aims based upon a common scheme of planning for the future, and should the possibilities and demands of the times be met on a broad basis of regional planning for regional service, or shall it find expression in destructive competition, political myopia, and petty parochialism? But the question may reasonably be asked: What constitutes a region or a metropolitan district?

Any one familiar with a specific region may at a glance define with considerable accuracy the limits of a metropolitan district or area capable of comprehensive planning as a unit of social and economic life. Where mountains and valley and access to water frontage have not developed a natural self-contained area, the transit facilities, the distribution of population, the character of the soil, the availability of natural resources, the division of productive activity will act as guides. New York's metropolitan area may be calculated as the region with a 50 mile radius. Philadelphia is perhaps more nearly the center of a district with a radius of 25 miles, while San Francisco Bay may be the center of a region of more or less irregular outline and not exceeding 35 miles at any point.

In this country where means of transportation are constantly growing in extent and increasing in efficiency and speed, the radii of regional boundaries may change from time to time, but the principle of common interest remains the same. The horse drawn vehicle limited the boundaries of social and economic units of community development to a five and ten mile radius, the railroads and the automobile have expanded the sphere of interdependency to from 25 to 50 mile radii, and the heavier and lighter than air fliers will further extend the boundaries of intensive intercommunity traffic and business.

That these limits of regional development have long ago overtaken the limits of our vision in intercommunity planning is quite obvious. An examination of maps of specific regions will reveal an entanglement of highway and rail lines inconsistent with regional requirements and economy. The distribution of business and industry is haphazard and uneconomical to both producer and the public, the distribution of community functions is competitive and uncontrolled by either suitability of site or efficiency or service, while costs of improvements represent

duplication and waste. This is particularly the case with water supply, sewage disposal, transportation, highway construction, location and distribution of public and semi-public buildings, park sites, harbor development and terminal facilities.

Regional planning affords a new outlook into the future development of American life. It tends to correlate the functions of the various political units into a geographic whole in which each unit has an organic place and function in relation to the whole.

A regional plan is not merely a combination of community plans. Nor should it supercede the local plan which deals with local problems. It should function in the interest of each community only so far as such community bears a relation to the adjoining regional territory and serves its interests as well as receives the benefits and advantages of regional development.

All regional planning should be preceded by regional survey. These surveys should consist of a comprehensive stock taking of all the human, business and industrial factors in their relation to the natural geographic environment, its advantages and disadvantages in the development of social and economic institutions. The scope of such survey will be dealt with in the next article.

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NATIONAL CITY PLANNING CONFERENCE

The annual meeting of the National Conference on City Planning will take place this year in the city of Los Angeles from April 7 to April 10, inclusive. While the final program has not yet been announced, if the conference maintains its usual standard, it is expected that the deliberation will be of national importance, as those in attendance and the speakers will be the representatives of the profession and the leaders in the city planning movements throughout the country.

The past year has brought a number of important and at times, disconcerting court decisions bearing on the legal powers of municipalities, county and state, in matters of the planning and replanning of cities. New York's great enterprise for a regional survey, Chicago's vast undertaking along the lines of carrying out its original comprehensive plan, the work of the Federal government through the Department of the Interior in relation to zoning and housing, have all marked epochs of city and town planning during the past year.

Many of those in attendance have taken a leading part in the more advanced and constructive movements in the interests of city planning and will bring their message to the National Conference. Those interested in housing, zoning, regional planning and general community improvement, should find inspiration in this important conference, which for the first time is to be held on the Pacific Coast.

Among those who are expected are the following: Messrs. Edward M. Bassett, E. P. Goodrich, B. A. Haldeman, John Nolen, Lawrence Veiller, Robert Whitten, Frank B. Williams, and others.

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REVIEWS OF RECENT BOOKS

Patrick Abercrombie and T. H. Johnson—The Concaster Regional Planning Scheme—University Press of Liverpool, Ltd., 1922.

Patrick Abercrombie, Sydney Kelly and Theodore Fyfe—The Deeside Regional Planning Scheme—The University Press of Liverpool, Ltd., 1923.

W. Hewett—The Wirral Peninsula—The University Press of Liverpool, Ltd., 1922.

The reader has before him three imposing volumes each dealing with regional problems and regional plans of distinct sections of England. These studies are teaming with facts and follow scientific methods of investigation laid down by such leaders as Patrick Geddes and Patrick Abercrombie.

The compactness of community development in England and the close interelation of individual communities is responsible for the widespread interest in Regional Surveys and Planning. That the interest in Regional Surveys should have reached the point where it finds expression in District Regional Surveys associations, such as was created in Liverpool six years ago, will be quite surprising to American readers. The books mentioned above bear testimony to the importance that this subject is assuming. In general outline, in the arrangement of facts and the compactness of description these volumes present very unusual merit, but the scope of regional survey work in this country should not follow closely the lines laid down by the English planners. The perspective of fact values is quite different in this country and presents peculiar local angles that should not be overlooked.

Thompson F. Longstreth—Site Planning in Practice—Henry Frowde and Hodler and Stroughton—London, 1923.

American cities are growing apace. The highways and byways are extending their tentacles into new and undeveloped territories engulfing hill sites and farm sites and creating urban conditions where there were fields and forests less than a decade ago.

The speculative and human value of these new developments generally described as subdivisions involves hundreds of millions of dollars in investments and profits. These values, however, are largely dependent upon the way in which subdivisions are planned and carried out.

Site Planning in Practice is the first authoritative work embodying some of the fundamental principles of subdivision development and reviewing the valuable experience of English estate development. This is not the place for a critical analysis of American experience, nor for a review of the conditions which have led to the confusion due to poor subdivision work that now exists in many cities.

Engineers and architects will find in this book a comprehensive and adequate guide in the study of land subdivision, the principles to be considered and their relation to the community and individual buildings. We must caution the reader however, against a too ready acceptance of English methods as applicable to American conditions.

Fisher, Ernest McKinley—Principles of Real Estate Practice. The Macmillan Co., New York, 1923.

Principles of Real Estate Practice is a book which, although dealing with a purely business subject represents a very unusual degree of social and economic consideration in so far as real estate affects the community and the individual building.

The tendency towards translating all business activity into fundamental principles and to inject features of scientific research which would professionalize the work of the dealer in real estate has nowhere been more clearly demonstrated than in this book.

The chapter on "Subdividing and City Planning" is valuable as a supplement to "Site Planning in Practice," reviewed above, as it furnishes some data regarding American conditions and methods and touches upon the possible means of legal control in land subdivision work in this country.

Reducing Material Costs*

By SULLIVAN W. JONES, Architect

THE building industry can never be operated economically until there is a basic standardization and a maintained balance between supply and demand.

Our difficulties of high costs and high prices are due to the very general, and I might say almost universal, adherence to the unsound doctrine of competition and unco-ordinated individual initiative. Those in public office have always capitalized for political ends the public's belief in competition and individual initiative as the dynamos of progress.

There are men in Washington who know that competition must ultimately lead either to chaos or to monopoly; who know that the so-called anti-trust laws operate to create monopolies; but who are afraid to light a new torch of leadership.

If we examine the conditions under which housing material is constructed we find that instead of having a machine or a set of machines producing the exact number of bricks, of tile, of gallons of paint, and of square feet of sheet metal, all of the exact type and quality required, we have anywhere from two to 200 individual plants making each of these and the other parts of buildings.

As I have epitomized the situation in the building industry it would be bad enough, but it is made worse by the fact that the assembler of the house does not really know which of the 200 competitive products is best suited to his needs; and, moreover, even if he does know exactly what he wants, frequently he does not know where to get it if it is manufactured, or how to describe what he wants in terms which mean the same thing to the manufacturer as to himself. There is no common or standard terminology.

There is no co-ordination of effort in competitive production and selling. There can be none. It is a case of every man for himself, without regard for what others are doing and without much regard for the consuming public's needs or ability to consume. This pushful competitive production and selling we call individual initiative. It is that, of course, but it has run riot and does not work.

We select our contractors through price competition and steadfastly adhere to the practice in spite of the growing knowledge of the fact that it increases the cost of our building somewhere between 4 and 10 per cent. For our more important projects we select our architects by competition.

A competition held recently for an important building in the Middle West cost the competitors certainly not less than $150,000, and while the owner of this particular building did not pay that loss, the owners of other buildings on which the unsuccessful architects were employed must divide it up between them.

Competitive individual initiative results in another item of waste which is charged through to the consumer and, in the building industry, becomes a permanent investment in buildings on which interest must be paid forever. This other item of waste is the over-development of productive capacity to satisfy temporary demand and is not infrequently the consequence of the process of substitution.

*Abstract of an address before the National Housing Conference, Philadelphia.

There are in this country today three companies manufacturing overhead trolley appliances. Any one of them can supply the entire demand for the produce. Approximately one-half of the brick plants of the country could, if they were operated efficiently and on whole time, supply the country's entire demand for brick.

We waste something like half of the lumber we cut because of obsolete grading rules and practices which have taken no account of the use requirements, but only of the needs of competitive merchandising.

The first step in a waste eliminating program is the establishment of standards for both dimensions and performance characteristics or qualities. By means of such standards the consumer may intelligently define and express his needs with full assurance that the producer will understand him. This will eliminate one element of uncertainty on the producing side of the market.

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Aluminum Paint Makes Radiators Less Efficient

THE aluminum or bronze paint generally applied to radiators greatly reduces their effectiveness and makes it necessary to have a larger surface for the same heating effect, according to experiments performed by Dr. W. W. Coblentz of the Bureau of Standards. Dr. Coblentz finds that the heat radiated from an aluminum painted radiator surface is less than a third of that emitted by a radiator of the same size painted with a non-metallic paint, enameled, or simply allowed to rust.

On the other hand he finds that aluminum paint is a very effective means of reducing the amount of heat transmitted through a thin material. Applied to the under side of a tent or awning it reduces by three-fourths the amount of heat from the sun which gets through the cloth, while if used on the cover of an automobile or ice wagon it cuts in half the heat let through and makes the temperature inside the vehicle more nearly that found in natural shade, thereby making it much more comfortable.

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Says Skyscrapers Are Seldom Financial Success

EXPERIENCE indicates that a skyscraper, as long as it is surrounded by low buildings, permitting it to secure from adjoining property an abundance of light and air, may pay a satisfactory return on the investment," said Mr. Robert Whitten, city planning expert of Cleveland, and continued: "When, however, equally high or higher buildings surround it, darkening the rooms in the lower half or more of the first building, its offices become less desirable, its tenants move into the newer buildings, and its income drops to a point where it may cease to pay a fair return. Some of the adjoining buildings in turn suffer a like experience. It is generally agreed that the very high buildings are not a great financial success, and that where many are built in close proximity to each other they are a serious damage to surrounding property, detrimental to health, a menace to safety and a contributory cause of traffic congestion."

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Every American is a 100 per cent American or no American at all. There is no such thing as a counterfeit dollar that is good for fifty, sixty or eighty cents.—Toledo Blade.

Analyzing Modern Specifications

By IRA T. MARTIN

IN analyzing modern specifications one is often caused to wonder if efficiency, about which we have read and heard so much recently, was just a fad to pass with the season or whether it is a factor still to be reckoned with in the analysis of our various engineering problems.

The public in general possibly knows very little of the expense and painstaking efforts put forth by manufacturers of operating machinery to supply the prospective purchaser with reliable data regarding the actual performance of their various products.

Practically every reliable manufacturer can and does furnish data regarding the performance of his products that is capable of reducing to a minimum the speculative element in the purchase of equipment for any specific purpose. Operating machinery is not unlike other commodities in many respects. You would hardly buy canned goods without a label, and yet the label does not in any way effect the contents of the can. Why then the importance attached to the label? Is it not that the label indicates the firm responsible for the product and that the standards of the firm reflect the quality of the goods.

None of our modern achievements have been discovered in their perfection. They have first been brought out in a crude form and afterward developed to their present point of perfection. In each of these various lines capital and talent have been combined to achieve perfection and this degree of perfection has been expressed in the term efficiency. In the commercial world the term efficiency has been taken as synonymous of superior quality, and as such has been commercialized to such an extent that its true value to the engineering world has been jeopardized.

In order that we may arrive at the true value of the term efficiency we must consider its source. If it comes from a salesman we are justified in interpreting the term to mean superior quality, but if it comes from an engineering source it can have but one meaning, facts that can be substantiated, conditions that can be written into spcifications, a basis upon which to compute future costs and profit and a true basis of comparison.

Many questionable tactics may be overlooked in a salesman if he brings in the "name on the dotted line." Among these may be included the commercializing of the term efficiency. With the engineer it is an entirely different matter. The customer has already placed his name on the dotted line, as far as the engineer is concerned, and the problem becomes one of delivering the goods. If the patent medicine man on the corner sells you gum drops for indigestion you cannot help but admire his ability to sell you to the idea. Why? Because there is no label on the can . If your physician gives you a prescription or specification for the same thing you have cause for resentment for the reason that, where professional services enter in, sales tactics become a breach of confidence. Specifications are then a form of guarantee backed by engineering knowledge and setting forth clearly the results to be accomplished in a manner understandable to the purchaser, as well as the contractor.

A specification then becomes of special importance primarily to three parties; to the purchaser because it represents the value of his investment; to the contractor because it involves an obligation he is

contracting to perform and to the engineer because it is his label. Too often the purchaser presuming his inability to understand a specification makes little, if any, effort toward an analysis. Such a practice is certainly inexcusable. Any mind capable of originating the idea of a structure or enterprise and capable of bringing it to a realization is certainly capable of judging, at least, the vital points involved in the specification. If the specification is not understandable it is a sure sign of weakness in the document, for its one purpose is to establish an understanding between the owner and the contractor.

The contractor usually studies a specification very closely but this does not necessarily mean that it is subject to analysis. The best evidence of this is the fact that while contractors are usually satisfied with about the same margin of profit there is often wide discrepancies in the bidding. This is for the most part due to a difference of interpretation of the specifications.

In order that a true interpretation be made possible, the effect of technical terms embodied therein must be analyzed. If the term efficiency is used, the intended interpretation should be clearly stated also, or the bidder be required to define the term as used in the proposal. Provision must also be made for all necessary tests and demonstrations to verify the correctness of any claims embodied in a specification or proposal and these tests recorded and made a part of the conditions of acceptance by the owner.

If this is not done the true intent of the use of the term efficiency is reversed and instead of protecting the purchaser in the matter of performance and establishing a standard to be met by competitive bidders it becomes an element of uncertainty and interpreted by the contractor in accordance with his understanding of the architect or engineer in charge of the work as to the demands that will be made to establish the claims specified in the proposal. If one contractor is certain or reasonably sure that no demands will be made for proof of efficiency and another contractor has not this assurance, certainly no common understanding has been reached, with the result that neither the purchaser nor the legitimate contractor have been protected, but the way has been opened for the practice of unscrupulous methods.

The term "or equal," the purpose of which was intended to broaden the scope of specification and invite competition, may also be completely reversed in its effect. If the term be interpreted to mean the equivalent by actual comparison on proven performances as established by universally recognized methods, the original purpose has been retained. If, on the contrary, it is interpreted to be the personal opinion of some architect or engineer, the original purpose may be entirely defeated and the manufacturer's data rendered useless and the purchaser's opportunity for legitimate competition narrowed to conform to the opinion of an individual.

The demand of the engineering profession has been for reliable data and now that the manufacturing world is prepared to comply with these demands in the most proficient manner, what are we going to do about it? One thing is sure, the manufacturers have shifted the burden of proof and it is up to the engineering profession to accept this data, or prove that it is unreliable. The data, as stated before, is just as reliable as the firm issuing it. If, then, a firm is conceded to be responsible its data must be accepted as a basis of comparison, and with the proper provision for demonstrative proof in the actual installation, all elements of uncertainty are removed. The man who is able and willing to pay his obligations does not hesitate to give a note. The manufacturer who

is able to substantiate his claims regarding the preference of his products is just as ready to sign a contract requiring demonstrative tests.

Natural laws never change, and as they are the foundation of all engineering, it is only reasonable to conclude that they take precedence over opinions, which substantiates the fact that reliable engineering data should form the basis of all specifications to the exclusion so far as is possible of the human element which may be a very uncertain factor.

Present day standardization has provided a recognized, and, in most cases, a legalized method of measuring every commodity entering into building construction and regardless of the exact text of a specification these standards must be recognized. Any attempt to obligate a contractor beyond the clearly defined terms of a specification shows lack of confidence upon the part of the architect or engineer as to the accuracy and completeness of their specification. This, again, tends to tear down rather than strengthen the understanding between the owner and the contractor.

The maximum efficiency of any specification is reached when it secures for the owner full value of his investment. Any building program requires an owner, a builder and a material dealer. The closer and more harmonious these factors are combined, the more satisfactory and efficient the results. To insure this satisfaction requires a definite understanding before the program is started as well as harmony of purpose during the carrying out of the same. This, then, is the obligation assumed by the architect or engineer. It is perfectly proper to say "my attorney," but it is essentially "our architect" if the full purpose is to be accomplished.

The term "lowest responsible bidder" certainly is intended to convey the idea of fair play on the part of the owner in awarding the contract. if this is to be as intended, a definite specification as to essential details of what will be accepted, is imperative.

Quality and price are two essential factors of value, and where value is the desired result both factors must be considered. A specification which calls for results and demands the manufacturer to stipulate both quality and price, leaves the purchaser to buy on value and not on price. There can be but one conclusion, the person who draws an efficient specification must understand their full requirements in definite and undisputable terms and must confine his activities to that place in the construction program allotted to his profession.

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Architects for Sacramento Municipal Auditorium

Mr. J. S. Dean of Dean & Dean, architects, has been appointed City Architect of Sacramento and he will be in charge of the preparation of plans for the new municipal auditorium for which $750,000 bonds were recently voted. Mr. G. Albert Lansburgh, architect of San Francisco and Mr. Arthur Brown, Jr., of Bakewell & Brown, will collaborate with Mr. Dean in the preparation of the plans.

* * * *

The trouble with us Americans is that first we pass the law, and then we pass the buck.—American Lumberman.

* * * *

Now that glands are the fashion as a panacea for every ill or want, why not give the sweat-glands a good tryout and see what happens? —San Diego Union. * * * *

The law of supply and demand doesn't always obtain. Look how many reformers we have, and how little reform.—Bethlehem Globe.

THE
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THE LICENSED ARCHITECT AND ENGINEER

In Seattle there is a movement by the Washington Society of Architects to secure legislation looking to certain changes in the State license law calculated to give architects and engineers greater protection. The initiative has been taken by Mr. Harry H. James, newly elected president of the Society, who suggests a measure which would require building plans accepted by all city building departments to be prepared by an accredited architect or structural engineer.

Just how so stringent a measure as this would work here in California is questionable. It is certain, however, it would not make matters much worse than they are at present. Too many poorly designed structures by incompetent draftsmen are allowed to pass muster under our very liberal building laws, and if permitted to go on unheeded the future of the accredited architect seems problematical. So long as a designer may practice without a license why should he trouble himself to appear before the State Board in quest of a diploma? Yet if this indifferent attitude is allowed to go on and buildings are permitted to be built without the stamp of a licensed practitioner, what is to become of the profession? The public needs to be educated into a finer appreciation of the difference between a licensed architect and an unlicensed draftsman or the self-styled architectural engineer.

CITY PLANNING AND HOUSING

The last two decades have marked a new epoch in the life and development of American cities. The problems arising out of the requirements of public health, the stupendous growth of industrial centers, the rapid changes in the methods and means of transportation, the highly centralized business development and the many tentacled inroads that cities are making upon their rural boundaries, have forced us to face new problems, and to glean new possibilities in the visualizing and planning of the future city. From Calcutta to Petrograd, and from Tokyo to New York the civilized world is taking heed of the science and art of city planning which alone can secure for us communities in which the life, the labor and the leisure of the people may be carried on efficiently and economically, and with the least waste of human resources.

The section on City Planning and Housing of The Architect and Engineer, commencing with this number and to be made a regular feature of future issues, will be devoted to the discussion of sub-

jects bearing upon City Planning and Housing from the point of view of modern experience and modern requirements, and will be conducted by Mr. Carol Aronovici, well known City Planning Consultant of Berkeley.

There is already available a vast literature on these subjects both in Europe and in America. There are, however, many phases of the subject that are still under discussion and there are still many legal and technical problems awaiting solution. It is to this field the pages of this new section will be devoted. Zoning, excess condemnation, height of buildings, limitations, standardization of street widths, harbor development, regional planning, the financing of city planning work, and many other problems of this character will find a forum in these pages.

LOCATION OF ELEVATORS

It is a serious mistake to split the elevator service in any building. In the Oakland Municipal building we have a glaring example of the split system. A person must watch both sides of the rotunda in order to see the signals of the cars. It frequently happens that by the time a person reaches the elevator on one side of the rotunda the cage has left, and he must return to the other side, there to meet the same condition. If the elevators were grouped the problem would be much simpler to the patron. There are other examples of the split system in San Francisco, notably in the California Insurance building. Wherever possible our advice to architects is always to group the elevators together, thereby avoiding the troubles which are so evident in the other systems.

Liquidated Damages

At one of the recent examinations conducted for architects, applicants for registration were asked the following question, says the Bulletin of the Illinois Society of Architects.

"What is the distinction between liquidated damages and penalty?"

In order that our readers may become thoroughly informed, the following quotations from answers submitted are published:

"Liquidated damages are damages awarded by arbitration, compromise or appeal to the courts."

"Liquidated damages are damages to property, real estate, land, etc., due to carelessness, accidents, etc., when the property spoiled is to be paid for."

"Liquidated damages are awarded in proportion to the damage, while penalties are claimed for amount stated in the agreement."

"Liquidated damages are caused by the failure to pay the creditors, all their bills are liquidated in one common sum against a party or parties."

"Liquidated damages are where the owner sets aside a certain sum to care for certain damages occurring during construction, and for which the contractor is not charged."

"Liquidated damages is where some firm by some reason desire to absorb, go out of business, discontinue shipment of materials to said contracting firm, says it be a cement contractor affected by No. 1 firm or party then No. 2 contractor is suffering liquidated damages."

Loads for Hollow Tile Walls

"Wasteful use of building materials, with consequent increase of construction costs and rents, is often due to lack of knowledge of how much load these materials can safely bear. This situation prompts architects, contractors, and the framers of building codes to call for an amount of material they know will be safe, without knowing whether or not it is excessive."

The U. S. Bureau of Standards has published the results of thirty-two tests on walls of hollow tile. These walls were 4 feet long by 12 feet high, and were 6, 8, and 12 inches thick, representing the outer wall of a house. Among other results, these tests showed that a wall with the hollow spaces or cells of the tile set vertically is nearly twice as strong as one in which the cells are placed horizontally.

These tests are described and the results given in Technologic Paper No. 238 of the Bureau of Standards, entitled "Some Tests of Hollow Tile Walls." Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C.

Skyscrapers No Help to Congestion

A news dispatch from London quotes Mr. Raymond Unwin, distinguished town planner, as severely criticizing American sky scrapers and expressing belief that this country will have to find some other

way to expand its cities. Discussing the office building problem in New York City Mr. Unwin is quoted as saying:

"With every added story the effective floor area per story is reduced and the cost per square foot is increased, while the greater number of elevators required take their toll of space from each succeeding floor.

"Every story added tends to darken all the floors below; even in spite of the bright light of New York this is becoming increasingly evident, and the number of rooms in which artificial light has to be used is much greater than in England.

"New York is discovering that you cannot dispense with transportation by going up. You merely change the horizontally moving street car for the vertically traveling elevator.

"Increased height means increased traffic congestion, while the darkening of offices and its consequent injury to health and efficiency is serious. Eyesight is injured and tuberculosis and other diseases are encouraged."

Tokyo Not Yet Repopulated

Temporary structures are still being built in Tokyo at a rapid rate, and from present indications such work will continue through the winter and well into the summer months since refugees are returning in great numbers for which shelters must be provided. In spite of the great number that has returned to Tokyo since the earthquake, close to half a million refugees are still living with their friends and relatives in the country and in other cities of Japan to which they fled, according to reports reaching the Department of Commerce.

According to an investigation made by the Metropolitan Police Board, refugees who are yet to return to Tokyo number about 467,000. A great many are also quartered with friends in Tokyo and some 86,000 are living in public barracks. Those still living in temporary shacks built by themselves during the earthquake period are said to number 5,200.

A total of 110,223 structures of various kinds had been erected in Tokyo up to November 23, at which time work was said to be going ahead at a rapid rate. Of this number 52,908 were residences; 49,722, stores with living quarters; 5,039, stores and offices, and 2,555 factories. Many of these temporary structures it is reported are as good and better in some instances than the buildings which were destroyed, especially in the poorer sections of the city.

No permanent buildings have been erected to date because of Imperial Decree prohibiting such operations until the Capitol Restoration Board has completed its plans for such building.

COMPETITIONS

Modern Design Contest

In its series of contests to encourage individual creative work among younger artists, Corona Mundi, International Art Center, announces a contest for a modern costume based on the style of Atlantis. The choice of subject for the contest at this time has been influenced by the recent excavations in Egypt as well as the brilliant examples of Mayan culture unearthed in Central America. It is felt that in these new discoveries of the beauties of the past history of man in an "Atlantean civilization," may be found vast material for application to modern design.

There will be three prizes of $100, $50 and $25. The judges will be Alfred Bossom, eminent American architect, Peyton Boswell, famed critic and editor of the International Studio, Howard Greenley, president of the Architectural Society of America, Samuel Halpert, American artist, and Louis L. Horch, the connoisseur and president of the Master Institute of United Arts. The contest will be closed on April 1, 1924.

All information as to the conditions of the contest may be had by addressing Corona Mundi, International Art Center, 310 Riverside Drive.

Competition for Scholarships

A scholarship competition, open to all art students in the United States, with the exception of those in New York City, will be held at the Art Students' League of New York on March 21, 1924.

Ten scholarships will be awarded to that work showing the greatest promise. Work in any medium, from life, the antique, landscape, etching, portrait, illustration, composition, also photographs of sculpture, may be submitted. All work should be forwarded so as to reach the league not later than March 15, and must be sent with return express or parcel post charges prepaid.

The scholarships so given will entitle the holder to free tuition in any two classes of the League during the season of 1924-25. Address all letters and packages to Art Students' League of New York, 215 West 57th Street, New York City.

Designing Bakery

Architect C. O. Clausen, Hearst building, San Francisco, is preparing plans for a two-story brick bakery building for the Twentieth Century Bakery Company on Howard street and Washington alley, San Francisco. The estimated cost is $50,000.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

Architect Knoll Busy

Plans have been completed by Architect A. H. Knoll, Hearst building, San Francisco, for a one-story reinforced concrete store and shop building on Geary street and 2nd avenue. Estimated cost $20,000; also, for alterations to a two-story Class C store and loft building at Broadway, Franklin and Hobart streets, Oakland, and alterations and additions to a three-story store and office building at Mission and 22nd streets, San Francisco, for the O'Brien-Kiernan Investment Company. The probable cost of the latter work is $200,000, the improvements to include a large market on the ground floor, offices on the second floor and apartments on the third floor.

Berkeley Architect Busy

New work in the office of Architect W. H. Ratcliff, Jr., of Berkeley, includes an eight-story Class A bank and office building for the Mercantile Trust Company, an auditorium for Mills College, two apartment houses, the first unit of a group of edifices for All Soul's Church to be erected at Cedar and Arch streets, Berkeley, and a large residence for Mr. H. H. Halloran on Belrose avenue, Claremont.

Designing Fraternity Houses

Architects Masten and Hurd, who recently moved their San Francisco offices to 278 Post street, are preparing plans for a fraternity house to be erected on Euclid avenue, Berkeley, for the Tau Kappa Epsilon, estimated to cost $30,000. They are also preparing drawings for a two-story frame club building on the same street for the Del Rey Club.

Six-Story Apartment House

Plans are being prepared by William F. Gunnison and H. P. Merritt, 57 Post street, San Francisco, for a six-story Class B apartment house on Van Ness avenue, San Francisco, for J. Pasqualetti, of the American Concrete Company. There will be twelve six-room apartments.

$700,000 Portland Building

An eight-story Class A store, theater and physician's office building is to be erected in Portland on the site of Pantages theater. The owner is the Hoyt Estate. No architect has been selected as yet.

Pebble Beach Homes

There is every prospect of considerable building activity at Pebble Beach, Monterey county, this year.

Plans are being prepared by Architect Houghton Sawyer, Hearst building, San Francisco, for a $35,000 residence at Pebble Beach for Mr. Wm. W. Orrick. There will be fourteen rooms and six baths.

Architect Clarence Tantau of San Francisco is preparing plans for a $35,000 country house at Pebble Beach for Mr. Samuel F. B. Morse, president of the Del Monte Properties Company. The house is being designed in the Spanish farm house type, arranged around a patio. Mr. Tantau is also preparing drawings for a country house in the same locality for Mr. W. R. Alburger, manager of the Key Route system, and for a studio and residence for Francis McComas, the artist.

Plans are being prepared by Architect George Washington Smith of Santa Barbara for a large country house at Pebble Beach for Mrs. Templeton Crocker.

Designing Apartment Houses

Messrs. Baumann & Jose, 251 Kearny street, San Francisco, have prepared plans for the following new apartment buildings:

Six-story reinforced concrete apartment house, south side of California street, west of Jones, San Francisco, for C. Peterson, estimated to cost $125,000; six-story reinforced concrete store and apartment building, 12th and L street, Sacramento, for Mr. B. S. Berry, to cost $100,000; three-story frame store and apartment building, Valencia street, between 15th and 16th streets, San Francisco, for Messrs. Bertram and Lundstrum, to cost $35,000.

Humboldt County Hotel

Architect George E. McCrea, 369 Pine street, San Francisco, is completing working drawings for a hotel to be erected near Garberville, Humboldt county, for the Benbo Development Company at an estimated cost of $100,000. Construction will be of native stone, concrete and wood and there will be approximately fifty rooms, large lobby and dining hall. Several cottages will also be constructed besides a garage and store building.

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(ORGANIZED 1857)

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To Make Trip Abroad

Professor Albert C. Phelps, of the College of Architecture at Cornell University, will again, as in 1923, act as leader of a group of architectural students during a trip in Europe next summer, according to an announcement just issued by the Institute of International Education, 522 Fifth avenue, New York, under whose auspices the trip is being arranged.

According to the preliminary announcement, the architectural course under Professor Phelps will be one of four overlapping courses which together will compose a general arts tour, the other three sections being designed primarily for students of painting, of landscape architecture, and of history, respectively. The architecture section, while not excluding objects of outstanding interest outside of the architectural field, will emphasize the study of important buildings and decorative compositions, the examination of drawings and models by the world's greatest designers, etc., and will give opportunity to photograph and sketch details of architecture and decoration.

Washington Chapter Elects Officers

Washington State Chapter of the American Institute of Architects held its annual meeting at Seattle January 12th. The speakers were Mr. C. D. James of Portland, who told of the work of the American Building Association and what it had accomplished; Mr. Charles M. Alden, who talked about the small house service bureau; Dr. John C. Perkins, who gave an illustrated lecture on Gothic architecture; and Mr. Charles H. Bebb, who recited a poem on the construction of the Taj Mahal of India. The annual banquet was held in the evening when Dr. John H. Gowan, of the University of Washington, gave the principal address. The following officers were elected: James H. Schack, Seattle, president; A. H. Albertson, Seattle, first vice-president; Herbert A. Bell, Tacoma, second vice-president; George H. Keith, Spokane, third vice-president; W. G. Brust, Seattle, secretary; Carl Siebrand, Seattle, treasurer; Sherwood D. Ford, Seattle, member executive committee.

School Plans Completed

Plans have been completed by Architects Shea & Shea at San Francisco for the new High School building at San Rafael, for which there is available $200,000. There will be sixteen class rooms and auditorium. The same architects are completing drawings for additional wings to the St. Mary's hospital at Hayes and Stanyan streets, which will provide one hundred and twenty-five new rooms. The estimated cost of the addition is $300,000. Construction will be in charge of Mr. Jas. L. McLaughlin.

SAN FRANCISCO
PUBLIC LIBRARY

Personal

Mr. Walter P. Williams has opened an office for the practice of architecture at 7868 Girard street, La Jolla, Calif.

Messrs. Bissner & Howard, architectural designers, have opened an office in the Security Bank building, 1608 Mission street, South Pasadena. Members of the firm are Harold J. Bissner, formerly of Long Beach and Pasadena, and W. R. Howard, formerly of Salt Lake City.

Mr. H. J. Quinn, formerly manager of the Oakland office and for the past three years manager for the Pacific Mfg Co. in Los Angeles, has severed his connection with that company, and announces the formation of the Hubert Quinn Millwork Co., Inc., with offices at 226-7 Marsh-Strong building, and plant on San Fernando road, adjoining the Pacific Door & Sash Co. Mr. W. F. Hayward is the new Los Angeles manager of the Pacific Mfg. Co.

Architects Masten and Hurd announce the removal of their offices from 168 Sutter street to 278 Post street, San Francisco.

Mr. B. Hedstrom, architect, has opened offices at 215 Market street, San Francisco.

Messrs. Ruggles & McKee, consulting architects and engineers, have opened offices for the practice of the professions at 1429 Broadway, Oakland. Trade literature and manufacturers' catalogues will be appreciated.

Messrs. Clifford A. Truesdell, Jr., and H. Carlton Newton, architects and engineers, announce their co-partnership under the firm name of Truesdell & Newton, succeeding Truesdell, Purinton & Newton, with offices at 302-7 San Fernando building, Los Angeles.

Architect Morris Bruice of San Francisco is traveling abroad.

Store and Apartment Buildings

Hutchinson & Mills, 1214 Webster street, Oakland, have prepared plans for a two-story store and apartment building at Domingo and Ashby avenues, Berkeley, to cost $30,000. Mr. Leslie R. Wilson, 2216 Blake street, Berkeley, is the owner and builder. Other new work in Hutchinson & Mills' office includes a $6500 residence for Mr. Thomas Fairfield, a $7500 residence for Mr. F. F. Anderson, and a two-story flat building in Berkeley for Mr. Donohue.

Oakland Auto Sales Building

Plans have been completed by Architect B. G. McDougall, 393 Sacramento street, for an automobile sales building and garage for the Buick Agency at Twentieth and Webster streets, Oakland. The owner of the property is Mr. Frank J. Hurley. Lindgren-Swinerton, Inc., have the contract at $109,000.

Oakland Hotel and Apartments

Plans have been completed in the office of the East Bay Planners, L. H. Ford, 306 14th street, Oakland, for a six-story steel and brick hotel for the Coit Investment Company, to be erected at 15th and Harrison streets, Oakland, at an estimated cost of $500,000. The building will contain 200 rooms, with 80 per cent baths, ten stores, a large lobby, dining room and banquet hall.

Mr. Ford has also completed drawings for a three-story frame apartment house for Mr. C. S. Lockwood, to be erected on Ellita avenue, off of Grand avenue, Oakland, at an estimated cost of $45,000, and for a one-story frame building of eight stores on 13th avenue and East 14th street, Oakland, estimated to cost $15,000.

Honolulu Growing

The architects in Honolulu are busy, according to Mr. B. E. Bryan of the Strable Hardwood Company, who has just returned from the Hawaiian Islands.

There are plans on the boards for all classes of buildings, including apartment houses, public and commercial buildings and dwellings, according to Mr. Bryan.

The general outlook for building activity in the Islands is excellent. More homes are needed and it is the general opinion that a large number will be built there this year.

Architect Sues For Fee

Papers in a suit filed by Architect W. L. Schmolle of San Francisco vs. Weller P. Stead, have been filed in the office of the county clerk at Redwood City, having been transferred from the Superior Court of San Francisco county on a motion for a change of venue granted the defendant. The plaintiff seeks judgment for $655, a sum alleged to be due for architect's fees.

Long Beach Architectural Club

Following are the new officers of the Long Beach Architectural club: Harvey Lochridge, president; Natt A. Piper, first vice-president; W. Horace Austin, second vice-president; Earl R. Bobbe, secretary; Leonard P. Wikoff, treasurer; Roy L. Wertz, sergeant-at-arms. James Rainey was named head of a committee to arrange a sketch contest.

St. Francis Wood Homes

Architect Joseph L. Stewart, Claus Spreckels building, San Francisco, has completed plans for a two-story Spanish type house to be built in St. Francis Wood for Dr. Lloyd Bryan at an estimated cost of $22,000. Mr. Stewart has also prepared plans for an English type house to be built in St. Francis Wood for Mr. H. S. Porter at a cost of $18,000.

New Member of Firm

Beginning with the new year the firm of Bebb and Gould, Seattle architects, took into junior partnership, Mr. Earl G. Park, who has been continuously identified with Mr. Bebb, subsequently the firm of Bebb and Gould, for more than twenty-five years. Mr. Park has been head of the drafting room several years and is well known to the firm's many clients, the contractors and material men throughout the city. He was admitted to the American Institute of Architects in 1918.

Post Office Building

A contract has been awarded to MacDonald & Kahn of San Francisco to erect a five-story Class A post office building at Merchant and Washington streets and the Embarcadero, San Francisco, from plans by Architect Alfred S. Alschuler of Chicago. The owner of the property is Mr. Jacob Kulp of Chicago, who has leased the building to the government for a term of years.

Pass State Examination

Six architects passed the mid-winter examination held at the University of Washington January 2nd. Eight men took the examination, those passing were: Henry S. Bertelson, Spokane; Stanley A. Smith, Pullman; Oscar F. Nelson, and John Paul Jones, Seattle; Franklin C. Stanton, Olympia; and George McPherson, Grandview.

Architect Walter Falch Busy

New work in the office of Walter C. Falch, Hearst building, San Francisco, includes a two-story and basement frame store and apartment building to be built on 27th avenue, East Oakland; alterations and additions to the country home in Belmont of Dr. H. C. Warren, and a $12,000 house for Mr. Walter Schaefer in Windsor Terrace, San Francisco.

New Cement Plant

The Pacific Portland Cement company will build a new cement plant in Redwood City from plans by its engineer, Mr. W. C. Stevenson. The plant will include a large mill, stock house, warehouse and office building and will have a capacity of twenty-five hundred barrels of cement a day.

Sacramento Office Building

Architect F. A. S. Foale of Sacramento has been commissioned to prepare plans for a twelve-story steel frame and concrete office building at 11th and K streets, Sacramento, for Messrs. William S. & H. H. Hart, local restaurant men.

Westinghouse Company's New Plant

The Westinghouse Electric & Manufacturing Company has recently awarded a contract to the Dinwiddie Construction Company of San Francisco for the construction of a second large building unit on the twelve acre lot of ground owned by the Westinghouse Company in Emeryville. This new plant when completed will cost close to $500,000. The new building will provide accommodations for a large assembling shop, extensive service and repair shops, a zone warehouse and various other facilities designed to render Westinghouse products and service more accessible and efficient to customers in the West.

The new plant was designed by Mr. Bernard H. Prack, consulting architect of Pittsburgh, Pa., and Oakland, who also designed the building of the Westinghouse High Voltage Insulator Company, located on the same piece of property in Emeryville, and which factory has just recently been put into successful operation. The same architect has completed construction of a large new factory in Emeryville for the Standard Underground Cable Company. W. G. Prack, a brother of the head of the firm of architects, is in charge of their Oakland office.

Architects Move

Architect Ira W. Hoover of Planada, Merced county, has moved to 408 So. Oxford avenue, Los Angeles.

Architect C. E. Perry, Jr., of Vallejo has moved to 211 Virginia street, that city.

Architect John O. Lofquist, formerly of Shea and Lofquist of San Francisco, has moved from 1399 Tamalpais Road, Berkeley, to 362 28th avenue, San Francisco.

San Pedro Hotel

Architects Noerenberg and Johnson, Los Angeles Railway building, Los Angeles, are preparing plans for a six-story reinforced concrete hotel to be built in San Pedro for Mr. Weldon and associates. The estimated cost is $500,000.

Oakland Apartment House

Plans have been completed by Architects Miller and Warnecke, Perry building, Oakland, for a three-story and basement brick and concrete apartment house to be erected on 12th street, Oakland, for Mr. I. Mendelsohn.

San Jose Parochial School

St. Patrick's Parish, San Jose, have authorized the completion of plans for a parochial school at Ninth and Santa Clara streets, to cost $120,000. Mr. Charles J. I. Devlin of San Francisco is the architect.

Great Increase of Building in Cities of Pacific Coast*

WITH a grand total of $492,449,908 in building permits issued during 1923 in fifty-four cities of the Pacific Coast States, an increase of more than thirty-eight per cent in building activities was shown for the year just ended over the total figures of these cities for 1922.

Utah, with four cities reporting, showed the greatest relative annual gain—fifty-three per cent — while California with thirty-five cities reporting, came second with a gain of forty-two per cent over 1922. Washington gained twenty per cent, Oregon seventeen per cent and Arizona fourteen per cent over the previous year. Annual gains of the larger cities are: Los Angeles, fifty-six per cent; San Francisco, three per cent; Portland, eleven per cent; Seattle, sixteen per cent; Salt Lake City, thirty-four per cent; Long Beach, sixty-eight per cent; Oakland, twelve per cent, and San Diego, twenty-one per cent. California's total, $414,887,500 is eighty-four per cent of the whole. Of the first twenty-five cities in the United States showing greatest volume of permits during the year 1923, six cities are located on the Pacific Coast.

BUILDING PERMITS

	1922	1923
CALIFORNIA		
Alameda	$ 971,115	$ 1,480,676
Alhambra	3,451,236	7,230,830
Bakersfield	1,898,686	1,170,905
Berkeley	5,610,028	7,857,139
Beverly Hills	2,047,739	3,891,078
Chico	234,604	479,644
Compton	378,450	1,681,492
Emeryville	280,307	875,451
Eureka	578,300	921,700
Fresno	7,225,150	5,890,104
Glendale	6,305,970	10,047,694
Long Beach	14,041,418	23,693,580
Los Angeles	121,206,787	200,133,181
Modesto	1,122,601	945,074
Oakland	24,468,223	27,628,897
Palo Alto	1,299,761	1,558,243
Pasadena	9,412,480	11,534,186
Piedmont	1,426,887	1,752,047
Pomona	767,357	1,695,816
Redwood City	451,492	1,196,086
Richmond	897,071	1,147,924
Riverside	1,458,429	2,393,327
Sacramento	9,401,753	9,699,586
San Bernardino	2,209,663	2,142,861
San Diego	10,280,990	12,525,428
San Francisco	45,327,206	49,594,011
San Jose	1,967,720	9,970,702
San Leandro	1,064,054	1,711,885
San Rafael	219,800	490,325
Santa Ana	3,771,831	5,166,587
Santa Barbara	4,257,873	3,842,812
Santa Cruz	715,045	1,076,750
Santa Monica	3,876,405	5,537,679
Stockton	3,141,900	3,897,130
Vallejo	478,471	252,777
WASHINGTON		
Aberdeen	437,111	1,009,001
Everett	693,702	1,455,406
Hoquiam	480,640	608,457
Seattle	19,783,835	22,482,678
Spokane	3,177,234	2,483,063
Tacoma	4,250,352	5,220,193
Vancouver	238,970	628,970
Walla Walla	514,710	419,348
UTAH		
Logan	338,400	232,100
Ogden	1,019,223	

*Compiled by The Architect and Engineer from figures furnished by Municipal Building Departments and Chambers of Commerce.

Provo	800,000	916,812
Salt Lake City	4,351,133	6,858,394
OREGON		
Eugene	956,823	1,138,558
Portland	22,734,600	25,247,135
Salem	1,082,270	1,287,282
NEVADA		
Reno	729,010	583,326
IDAHO		
Boise	611,297	737,331
ARIZONA		
Phoenix	1,749,850	1,807,211
Tucson	1,073,276	1,430,016

Quite True!

Old Ben always weighed his words carefully.

The contractor put him to work digging a trench from the house to the water main in the street. Old Ben was busy with pick and shovel when an acquaintance approached, and cheerfully inquired:

"Digging out a hole?"

Old Ben considered the question carefully, and as he took a fresh grip on the handle of the pick, replied thoughtfully:

"Not so. I be just diggin' out the dirt an' leavin' the hole."

Oakland Residence Work

Architect W. E. Schirmer, Thayer building, Oakland, has completed plans for a $14,000 residence for Mr. H. J. Kaiser to be built at Lake Knoll, Oakland. Mr. Schirmer has also completed drawings for a house in Piedmont for Mrs. Bryan and one in Lakeshore Highlands for Mr. Grassman, to cost $13,000 each.

Bank and Office Building

Architects Morgan, Walls and Clements, Van Nuys building, Los Angeles, have been commissioned to prepare plans for a twelve-story Class A bank and office building to be erected on the northwest corner of Ninth and Hill streets, Los Angeles, for the Pacific National Bank.

Addition to Bank Building

Architect H. A. Minton, 550 Montgomery street, San Francisco, has completed drawings for a two-story Class A addition to the Bank of Italy building at Broadway and 11th street, Oakland. It is estimated the improvements will cost $100,000.

Los Angeles Club Building

Architect Edwin Bergstrom, Citizens National Bank building, Los Angeles, has been commissioned to prepare plans for a thirteen-story Class A club building for the Southern California Commercial Club. The structure will cost in the neighborhood of $1,000,000.

California's Cement Production

All records of production and shipment of Portland cement in California were broken by the output for 1923. The following figures show the production, shipments and stocks on hand for three years, as contained in a preliminary report of the U. S. Geological Survey:

	1923	1922	1921
Production, bbls.	11,490,000	8,419,000	7,327,000
Shipments, bbls.	11,394,000	8,682,000	7,129,000
Stocks, Dec. 31	360,000	243,000	511,000

Production in California for December, 1923, was 965,000 bbls., as compared with 700,000 bbls. in December, 1922, and 558,000 bbls. in 1921. Shipments for the month totaled 889,000 bbls., as compared with 647,000 bbls. in December, 1922, and 491,000 bbls. in 1921.

Production and shipments for 1923 and stocks on hand at the close of the year for the entire United States were as follows:

	1923	1922	1921
Production, bbls.	137,377,000	113,870,000	98,293,000
Shipments, bbls.	135,887,000	116,583,000	95,051,000
Stocks, Dec. 31	10,581,000	9,108,000	11,938,000

The remarkable record made by the industry during 1923 in taking care of a demand which has increased over 40 per cent in two years could scarcely have been achieved under less favorable conditions. The cement industry is particularly sensitive to transportation and fuel situations and the absence of shortage of both these essentials during 1923 was most helpful.

Production of portland cement in December was nearly 10,000,000 bbls. and shipments were about 6,400,000 bbls., both records for that month although showing the usual seasonal decline from preceding months.

Stocks of finished cement in manufacturers' hands increased over 3,500,000 bbls. during the month and December 31 were 10,581,000 bbls., a quantity exceeded only once during the past eight years.

Addition to Department Store

A ten-story Class A addition costing $400,000 to Bullock's Department store in Los Angeles has been commenced from plans by Architects John and Donald B. Parkinson of that city.

With the Engineers

CONCRETE STOREHOUSE FOR ASSOCIATED OIL COMPANY, AVON

Associated Oil Company Adopts Unique Type of Construction

THE Associated Oil Company, L. D. Jurs, chief engineer, has recently had completed at its plant in Avon, Contra Costa county, California, a storehouse of somewhat unusual type of construction. It was erected by Villadsen Bros., Incorporated, structural engineers and builders, with offices in San Francisco and Salt Lake City. The selection of this particular type of building was made by the Associated Oil Company after careful inquiry into the various

INTERIOR STOREHOUSE FOR ASSOCIATED OIL COMPANY, AVON

types of concrete construction. Besides offering a pleasing appearance the building possesses all the durable qualities of the most rigid construction. It is of reinforced concrete throughout, 180 feet long, 50 feet wide and 15 feet between arches. Considerable reduction in sectional area of members is permitted by the use of the Parabolic arch which also produces a well balanced design.

While innumerable buildings with similar long concrete spans have been erected abroad during the past twenty years, very few have been built in the United States. Engineers who have followed this type of construction have been impressed with the spaciousness of the interiors and absence of members to collect dust and obstruct light. The fact that the buildings are permanent and present a good appearance are additional factors in their favor. Structures of this type, according to the builders, may be erected at practically the same cost as non-fireproof structural steel buildings. This particular type of construction is not only suited to storehouses, but may be applied to machine shops, power plants, train sheds, public markets and garages.

The Associated Oil Company is so well pleased with its initial experiment of this type of construction that it has awarded a contract to Villadsen Bros. to build a two-story office building at its Avon plant at an estimated cost of $40,000. Construction will be of concrete in accordance with plans by the engineering department of the oil company. Old Mission Portland cement was used in building the storehouse and will also be used for the office building.

1924 National Convention of Engineers

San Francisco has been designated by National Headquarters, American Association of Engineers, as the place for holding the 1924 national convention.

The San Francisco Chapter has elected L. F. Leurey convention manager, and Chas. C. De Wolf, assistant convention manager, as representatives of San Francisco and Oakland, respectively.

Manager Leurey's plans include the usual committees, such as, arrangement, finance, advertising, transportation, hotel accommodations, entertainment, etc.

Program and papers will be cared for by National Headquarters.

The meeting place will be the Palace hotel, San Francisco, in accordance with National Headquarters' requirements as to seating capacity, committee rooms, etc.

Advertising literature supply has been arranged with various organizations, including "Californians, Incorporated," Convention and Hotel League, Chambers of Commerce of San Francisco and Oakland.

Chapters in California will not be called upon by San Francisco for financial assistance; but California Chapters are requested to make their arrangements for greeting and entertaining sections traveling through their cities to and from the convention; are urged to send maximum number of delegates to the convention, to show A. A. E.'s strength in California, and to come to the convention with songs, banners, bands, slogans, etc., according to the initiative of each Chapter, to demonstrate the interest and enthusiasm of California engineers.

The date for the convention is between April 15th and June 15th.

San Francisco urges that the dates be June 11, 12, 13, Wednesday, Thursday and Friday. Three full days are required for business, with little or no time for excursions.

Bridge Engineer Resigns

The resignation of Mr. H. E. Warrington, bridge engineer of the California Highway Commission for the last four years, became effective February 1st.

Mr. Harlan B. Miller, assistant bridge engineer, will have charge of the department pending appointment of a successor. During his service with the commission Mr. Warrington has had responsible charge of the design of many bridges and of the acceptance of designs of others involving the expenditure of some five million dollars.

Among the more noteworthy structures designed under Mr. Warrington's supervision might be mentioned the heavy steel bridge over the Feather river at Oroville, the fine girder bridge over the Big Tujunga river in Los Angeles county, the Bear Gulch bridge, a beautiful arch span of 128 feet, a heavy arch over the South Fork of the Yuba river, the Stony Creek bridge, the Rio Hondo bridge in Los Angeles county, the Susan river arch bridge at the Devil's Corral in Lassen county, the San Gabriel river bridge in Los Angeles county and the Whitewater river bridge in Riverside county.

Previous to coming with the State, Mr. Warrington was for eight years bridge engineer of Los Angeles county.

A. A. Anderson Resigns

Mr. A. A. Anderson, secretary of the Los Angeles Chapter, A. S. E., has resigned his position with the California Railroad Commission, to be associated with Mr. Stanley Benedict, until recently a railroad commissioner, formerly U. S. Congressman, and now an active officer of the California Building & Loan Association and the Capital Finance Corporation of California, with offices in the Pacific Finance building, Los Angeles.

Field of the Contractor

Economic Aspects of Day Labor Construction*

By ARTHUR S. BENT, Los Angeles

IN discussing with you this question it is quite likely I shall be unable to hold myself strictly to its economic aspect, except in the broadest sense of the term, because the consequences of its decision are far reaching and many sided and are not confined merely to the measure of dollars and cents. Indeed I am not sure this is its most important aspect.

Comparing "firm contracts" and "day labor" I believe it would not be hard to demonstrate that these two methods of carrying on year after year, the huge construction program of this nation, are so radically different that their results must to some degree affect differently our national character itself.

The problem we are to consider is not hypothetical. All over the country today there is a growing tendency among public officials to do public work by day labor. This is not confined to maintenance, or to minor municipal operations, but reaches to single major projects of great importance. River levees built by the Federal government, highways built by states, dams and canals built by irrigation districts, asylums and hospitals by counties, schools and sewers and paving by cities—all by day labor. The real causes of this tendency are not easy to determine, but the reasons given by public officials are quite simple and specific. Chiefly they are, first, "to save the contractor's profit," next, to permit of more elasticity in carrying on work—under day labor method the responsibility upon the governing bodies of knowing just what they are going to do and how, does not press heavily. Next, work can be started quicker. But back of these and other reasons lie basic causes which are not so easy to get at. Sometimes it is a desire for power and the support in authority, which comes from a large body of subservient employees. Sometimes it is just politics of the old sordid variety, less common now but not yet gone from public life. To some extent it is traceable to a tendency toward socialism. Sometimes there is genuine discontent with contractors, or distrust of them. And let us in fairness say that sometimes it comes from a sincere, if mistaken, impulse to save money.

Whatever may be the underlying causes, the tendency is unmistakably manifesting itself and as construction men who not only are vitally interested but who should be expert in their knowledge and their conclusions, we are considering the matter as unselfishly and honestly as we can and asking the public to review our findings in the same spirit.

If as we believe, this is a question of grave importance, involving much more than our own interests, then it must be so by virtue of the magnitude of the construction industry, or its vital connection with society, or both, and so we may be pardoned for bringing up once more a picture of construction as we now see it and a suggestion of the part it plays in the life of the world today.

In Secretary Hoover's last year book this statement is made: "Construction in the United States in 1922 exceeded five billions of dollars, equalling the combined value of wheat, corn, oats, barley and rye, almost equalling the net operating receipts of all the railroads in the United States and exceeding by 50 per cent the total exports of this country. Activity in construction bears a close relation to general business conditions."

S. W. Straus in a recent White House conference said, "there is potential need for eight billion dollars' worth of new buildings in the United States today. The nation's volume of buildings for 1924 will reach five billions, and all of this is just so much new capital created to contribute its share of Federal, State and city taxes."

Secretary of Labor Davis recently stated as follows: "More than eleven millions of our people are dependent for their living upon the construction industry and 22 per cent of all the skilled and unskilled labor of the country is engaged in the building branch alone. Some 250,000 freight cars are required to handle the materials. Our building bill is $200 per year for each family in the United States." Mr. Davis concluded, "it is truly the chief barometer of the business of the country. When construction gains, prosperity is with us. It is the great outstanding influence for good or bad in our financial progress."

Another author has recently referred to construction as the "big tool of mankind" and says "it has always been the

*Extracts from an address delivered at the fifth annual meeting of the Associated General Contractors of America, Chicago, January 21, 1923.

best means of expressing the impulses underlying civilization."

Evidently, construction contributes heavily to the tremendous buying power of our people and the savings banks of the country reflect to a remarkable degree the activity of this field. Construction is truly the key industry which unlocks the rest.

The cold facts are impressive. About 30 per cent of the nation's wealth is produced by construction and it absorbs 60 per cent of our national savings. Some 3,000 other industries are dependent upon it. Over 90 per cent of the iron, copper, lead and zinc we produce is consumed in construction. It is simple truth to say that construction precedes and underlies all human development. "Everywhere the spirit of the builder hovers over the earth." Everywhere he is ceaselessly shaping the amazing structure through which human life functions and finds opportunity and happiness—building the highway over which it is traveling to its ultimate destiny.

Now, who do the advocates of day labor work ask us to take in his stead for handling the 5,000 million dollars we will put into construction this year? Why, a politician, placed in office by a campaign in which his ability as a construction manager was not even remotely considered. He holds that office for a limited time until a new but similar official may take his place. He has no organization, no plant, no experience and frequently so little executive ability that the business world has passed him by, and public office is the best job he can get.

It is a commonplace to say that we all recognize the propriety and necessity of a certain amount of day labor work. Many emergencies can best be met by this method. Most maintenance work should be so carried on. And there are rare cases where the conditions indicate it for major operations. But in spite of such notable instances of successful construction as the Miami Conservancy District and the Los Angeles Aqueduct, the prosecution of public work by day labor has been a long story of waste of public money and the development of inefficiency. This is such common knowledge that I shall take your time with only a few examples, and moreover, shall confine myself to my own observations.

The State of California had a most significant experience in building highways by day labor, which is fairly illustrated by an excerpt from the report of the United States Bureau of Public Roads published in 1920. This shows from a study of twenty California highways, ten of which were done by contract and ten by the State's forces, that the contracted jobs exceeded the engineer's estimates by 39 per cent while the day labor jobs exceeded the engineer's estimates by 193 per cent.

In the joint report of the two great California automobile clubs may be found the statement that of 300 highway jobs done by day labor, and amounting to seven millions of dollars, the State's account showed unit costs on only five jobs. On two of these five, the State first called for bids and rejected them on recommendation of the State Engineer, who then undertook the work himself. The record shows the following figures:

	Engineer's Estimate	Contractor's Bid	Actual Cost to State
Excavating . .	.55	1.10	1.17 per cu. ft.
Concrete	4.50	7.50	10.38 per cu.yd.

In totals this means on the first job a bid of $117,000 and an actual cost of $160,000 or a loss to the State of over 37 per cent, and on the second job a bid of $43,000 and a cost of $81,000 or a loss to the State of almost 90 per cent.

With such facts within their knowledge what shall we think were the reasons that led State officials to continue this method to the extent of $7,000,000 worth of highways; and were their reasons typical? It is gratifying to add that the present California administration went into office under a pledge to stop this reckless waste and to carry on its public construction under public competition and firm contracts protected by surety bonds.

The Gila Dam in Arizona was estimated to cost $800,000. It was built by day labor, without change of plan at a cost of nearly $2,000,000.

A county engineer of northern California made the statement to me that during his administration practically all of the highways built by day labor ran 20 per cent above the bids received for the same work, and moreover, that inspection was poor and labor inefficient. Also, that in the few cases where cost keeping was attempted at all, nothing was allowed for equipment or its depreciation.

I could fill my allotted time with illustrations, big and little, of the waste of public funds on day labor construction, but every man here could do the same thing. The taxpayer everywhere comments on this waste and has his sarcastic joke about it. The story is written too plainly to be misunderstood. But let me add a word or two from experts who are disinterested.

California State Highway Engineer Morton says, "We have no conviction that day labor work generally offers a means of saving money. We know that it increases the overhead expense, and by scattering the energies of the administrative officials, detracts from the quality and quantity of supervision given to contracts."

Now two fundamental questions next

(Concluded on page 122)

What the California Highway Commission has Done and is Doing

By ROBERT M. MORTON, State Highway Engineer.

THE total length of state highways in California, including unconstructed roads, is about 6,400 miles. This system has been built up from time to time by the mandates of bond issue enactments, approved by the electors of the state, and by legislative action. The state highway mileage is slightly less than 10 per cent. of the estimated total public highway mileage of the state.

The interpretation of the provisions of the First Bond Act formed the nucleus of the present state highway system with a total of 3,082 miles of highway. As a result of the Second Bond Issue, voted in 1915, 680 additional miles were added. The 1919 Bond Issue brought 1,798 miles into the system. By legislative enactment, the mountain highways under maintenance by the state prior to 1910, and other roads to a total length of about 840 miles have been added. This last item has been added to the system with practically no appropriation for construction.

With the end of 1923 there have been constructed 920 miles of grading with or without rock or gravel surface. There have been constructed 2,035 miles of grading with concrete or other hard surfaced pavement; 267 miles constructed by the counties have been added to the system on which no work has yet been done by the state, making a total of 2,302 miles of pavements. This leaves a total of 3,178 miles, practically fifty per cent of the system upon which no work has as yet been done except for incomplete surveys.

Of the paved mileage, including both state highway construction and that taken over from the counties, 305 miles have already been reconstructed or are provided for in existing contracts.

Leaving out of account reconstruction requirements, the estimate of the Highway department for the completion of the state highway system prepared last spring for the legislature, which included paving on about 1,000 additional miles and grading and surfacing on the balance, amounted to slightly over 200 million dollars. It is recognized that the traffic increases during the period in which this expenditure could be made if funds were provided, would probably make necessary the paving of more than 1,000 additional miles. Therefore the estimate of 200 million represents the cost based on our present standards, and is a minimum figure.

With this situation confronting them, the commission has capital funds available, about two-thirds of which consists of uncollected Federal aid already authorized by Congress of $12,000,000.

The obligations of the 1919 Bond Act are interpreted to mean that at least $20,000,000 must be expended upon the additional roads added to the system by that act. To date there has been about $11,000,000 expended upon these additional roads so that 75 per cent. of the present capital funds must be alloted to roads of the Third Bond Issue. The element which appeared most disturbing to the new commission was to find so much work under way on relatively unimportant roads, and to see so much important main line construction incomplete.

With so many complex factors the new commission believed it necessary to feel their way, to personally investigate an learn for themselves the real situation.

Since assuming charge of the state highway department, the strain upon the funds for maintenance and reconstruction promises to be relieved by the new motor vehicle and gas tax measures which we conservatively estimate will produce at least 50 per cent. more annual revenue than the old measure. The receipts of 1923 under the old measure will be about $5,000,000. Next year's revenue should be at least $7,500,000.

The commission early adopted the policy of concentrating future capital expenditures so far as legally possible upon main line roads. This side-tracked plans which were in the office for other locations until new financing is provided, and made it necessary for the engineers to prepare surveys and plans on approved main line locations. This has caused an unavoidable lull in the progress. However, the expenditures of the commission from bond funds for new construction in 1923 will be at least $12,000,000.

Construction completed and accepted during 1923 includes a total of 428 miles, 142 miles of which was grading and surfacing. 89 miles consisted of reconstruction of pavements.

At present there are contracts in force and bids in the office for 346 miles of construction, of which 196 miles is grading and surfacing, and 57 miles is reconstruction of pavement or grade. Bids are being opened each week on one or more jobs. The work authorized last spring on main line roads and upon sections chosen for reconstruction has now reached the specification stage and the

total program of new construction and reconstruction for 1924 will probably be close to $15,000,000.

The disbursements for the fiscal year ending June 30, 1923, show a total expenditure of $17,730,015.86. The overhead charges for this period were $1,871,213.55, equivalent to 10.55 per cent.

Regarding future policies of the commission it may be stated that we propose to construct wider and heavier pavement sections. The deterioration of our pavements would not have been so serious had the original construction been to a width of 18 feet or 20 feet rather than to a width of 15 feet.

Regardless of the type of pavement, the narrow road is concentrating the ever-increasing traffic close to the point of weakest design, the unsupported edge. A twenty per cent. greater expenditure placed in additional width, would have been better spent than twice that sum placed in additional thickness, and would have changed the entire character of our reconstruction designs, cutting the expense in half.

No pavement planned at the present time on the state highway system will be less than 18 feet in width, and this only on secondary roads. On the more important roads the width will be a minimum of 20 feet, which will amply take care of two-way traffic, to a limit of about 5000 vehicles per day.

In regard to the thickness of pavements, our minimum thickness of concrete construction will be 6 inches with edges deepened to 9 inches in three feet. This we do not regard as being standard. In the first paving contract let this year, which has already been completed on the Foothill boulevard, in Los Angeles county, a 7-inch thickness has been used deepened to 10 inches at the edge. Even this thickness of concrete pavement is not regarded as being safe practice unless it is placed on first-class foundation. On newly graded roads, we are preparing a large program of gravel and crushed rock surfacing for present needs, which will later furnish a compact foundation for paving.

The commission also plans an aggressive reconstruction program. The requirements involve many classes of work from realignment and regrading in the Sacramento and Shasta river canyons, formerly built on low standards, to the heavy widening and pavement reconstruction imperative in the vicinity of San Francisco and Los Angeles. This need for reconstruction is running us a race in which we are constantly secon best. The improvement of the road and the bettering of alignment and surfacing encourages more and faster traffic.

The maintenance, small betterments and reconstruction necessities will absorb for many years all of the gas tax and motor vehicle fund money which will come into the coffers of the state. At this time we are launching a program of about five million dollars for about 175 miles of reconstruction during 1924. The state could use twice this sum annually in replacing sections which are an actual menace to traffic. It is not only the pavements which need rebuilding; on unpaved mountain sections practically the whole road must be rebuilt before it can be paved. On the main highways through Mendocino and Humboldt counties the requirements faced by the state for rebuilding is appalling, and this at a time when there still remains almost 100 miles of unconstructed road on that route. The width to be used for most of the concrete type of surfacing work will be 20 feet averaging 6 inches in thickness over the top of the old pavement. The shoulder thickness will average 8 inches beyond the limits of the old pavement. On this class of work, a center longitudinal joint will be used, with reinforcing across the edge of the old pavement.

Profiting by the examples of excellent concrete pavement construction in Oregon and Washington, we shall install some sections with transverse expansion joints.

Wood as a Building Material

The United States Forest Products Laboratory, Madison, Wis., which since 1919, has been giving demonstration courses in kiln drying of lumber, boxing and crating, gluing of wood, and wood properties, announces a new course covering wood as a building material. This course is designed for architects, construction engineers, contractors, and others interested in the use of wood in building construction.

The subject matter will be presented in lectures and demonstrations by the experts of the laboratory, many of whom are well known to the building trade. The course will include some of the subjects that have been presented in the kiln drying, gluing, and other courses, which have been attended by hundreds of men from all parts of the country. In addition, the new course will take up the properties and uses of various species of woods in building construction; methods of determining the strength of wood; safe working stresses for structural timbers; effect of varying dimensions and of form of beam and joist on strength; decay in wood, its effect and methods of prevention; grading rules; moisture-resistant coatings; and fire prevention in wood construction.

WRITE IN ON THE SPECIFICATIONS

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Economic Aspects of Day Labor Construction

(Concluded from page 117)

present themselves. First—Has the evolution of this tremendous activity which touches so vitally every human life, developed an adequate specialized ability, either executive or technical? Second—Is that ability essential to its orderly progress?

If I could show you at this very moment in one amazing panorama, merely the physical problems which are being solved right now by the master constructors of the world, what an impressive answer it would be to our first question. What stupendous difficulties are being met, what marvelous works are being wrought. Great subways burrowed beneath the rivers and railways and buildings of New York. Factories whose deep foundations are crowding back the Mississippi river with its tidal sweep of over 30 feet. Concrete chimneys 300 feet high, 20 feet in diameter, built entirely upon the roof of a power house. Huge dams thrown across mountain gorges in the high Sierras, while torrential streams flow uninterrupted. Railways hung like spider threads along sheer cliffs and spanning mighty rivers. Docks and seawalls that make good the challenge "thus far and no farther." Subaqueous conduits that lie on the ocean's bed, and towers that pierce the sky. Aqueducts traversing deserts and ranges and lakes. Highways through swamps and under mountains. Buildings that tower in safety and beauty 50 stories above the city's streets. All of this and much more our flash light would show, and upon the throttle of this mighty engine of modern civilization, rests the competent hand of the general contractor.

Day labor work never has and never will develop the full efficiency and close economy which are the very heart of every successful contractor's history. And moreover, I make the assertion, not carelessly, that competent examination of even the most conspicuous examples of apparently successful day labor undertakings in this country, would probably reveal, not only an unnecessary cost, but the further fact that the engineers did not hold themselves to the methods or standards they would have demanded of the contractor. On a certain well known important construction, my own firm was specifically instructed by the Chief Engineer that our bid must be based upon aggregates obtained by opening up a remote quarry and crushing both rock and sand, because the aggregates along the job were not suitable. But when he decided to do the job himself he used the forbidden material exclusively, and on completion announced in public print a saving which, as a matter of fact, was much less than the amount we had added for the quarrying and hauling. His answer to me was, "well, I could safely do things that I could never permit under a contract." The maintenance gang that has been kept upon that particular piece of work ever since, is another story.

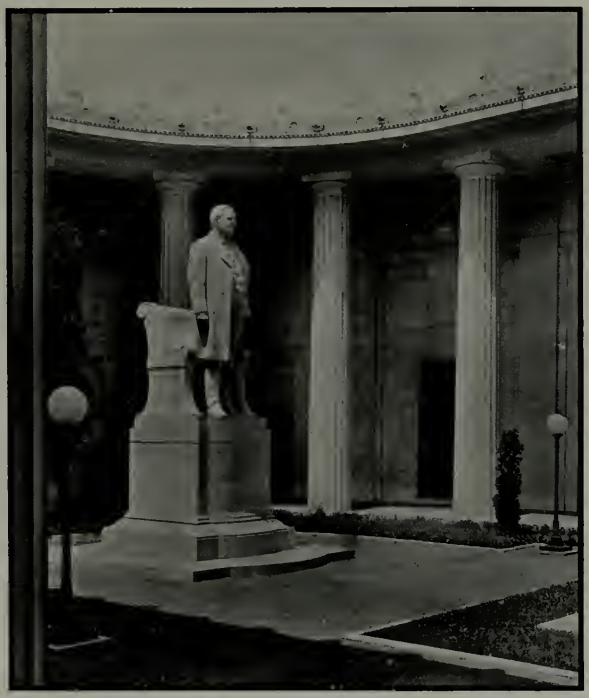
I also emphatically deny the soundness of the familiar argument for day labor, that it removes the incentive for slighting and insures better quality of work, and assert from my observations that just the opposite is true. We contractors in all lines of construction are constantly held up to the details of meticulous standards and specifications which no engineer or architect imposes upon himself. The engineer has no higher authority to criticize his own work. This is not a proper basis for public construction.

Neither will the public mind concede much favor to the other chief argument, that day labor permits the engineer to enter upon the work without the necessity of first fully preparing his plans. Great emergencies may occasionally justify such procedure, but as a method it is improper and unsound and leads to careless estimates and increased costs. It would be as proper to allow a contractor to plant the job one tool at a time as his need arose, as it is for an engineer to enter upon it before he has made the fullest possible study and worked his plans out to completion.

But the fundamental and glaring unsoundness in the day labor method of expending public funds lies in the utter lack of responsibility back of the estimates and hopes of the officials in charge. It seems axiomatic that the taxpayer is entitled to assurance as to the ultimate cost of public work. The best of intentions and the most honest efforts on the part of officials are a poor substitute for guaranteed costs, and financial responsibility. The taxpayers of the country would not knowingly put this option into the hands of the evershifting stream of politicians who pass through our public offices.

The contract method is time-honored and sound. It is based upon well established economic truths. Its competition develops low costs and enforces high efficiency. It furnishes the guarantees and responsibility upon which the safe financing of construction projects must rest. Such evils as it has from the public's point of view are not inherent in the method. They are solely the result of the failure of owners to demand skill, integrity and responsibility in their contractors.

But the day labor system is fundamentally unsound. It breeds dangerous politics, encourages inefficiency, lowers construction standards, develops extravagance, decreases production, destroys individuality and lets loose that spirit of



McKinley Memorial, Niles, Ohio

THIS lasting tribute to our martyred President is built of the finest materials obtainable.

All stone work is laid up in mortar of Medusa Non-Staining White Cement. Messrs. McKim, Mead and White, Architects. John Parker, Contractor.

Architects are invited to send for interesting Bulletins and to see our catalogs in Sweet's.

THE SANDUSKY CEMENT CO., Dept. P, Cleveland, Ohio

Medusa Stainless White Cement—Plain and Waterproofed—and Medusa Waterproofing are carried in stock and sold by leading building-supply dealers in California, Oregon and Washington.

MEDUSA
WHITE CEMENT

disloyalty to duty, which notoriously during the war spread like a plague over the whole world. We all need the spur of competition. We all need to feel the pressure of definite responsibility. We all need the rewards of individual initiative and effort. America's splendid and amazing career fairly rests on that foundation. Listen to the words of that discouraged prophet of day labor and communism, Leon Trotsky, as they appeared recently in the Literary Digest. "Our nationalized industries, even those working under exceptionally favorable auspices and well equipped, all are working at a loss. Our administrators and directors are not real masters who attend to every little detail, who watch everything, who save every minute of time and every cent of money, who work day and night caring for the needs of our plants." The same false theory upon which day labor rests has benumbed the great soul of Russia and not even her vast resources, greater than our own, will restore her.

To Make Cement Survey

The Secretary of Commerce has appointed an advisory committee to make, under the general direction of the Department of Commerce, a comprehensive survey of the properties and uses of cement and concrete. The committee will co-operate with the Bureau of Standards and officials of the department. The committee consists of:

John Lyle Harrington, chairman, engineer, Kansas City, Missouri; C. H. Boynton, cement manufacturer, New York, N. Y.; N. Max Dunning, architect, Chicago, Ill.; H. C. Turner, contractor, New York, N. Y.; Charles M. Upham, highway engineer, Raleigh, N. C.

The cement industry has grown so rapidly and has achieved such great importance in the United States, and the use of cement in the construction of roads, bridges and buildings has become so great and so diversified that the intelligent and appropriate use of this material becomes a matter of great economic interest to the public.

Research work is now being carried on by the Bureau of Standards and by various public and private research laboratories and commercial and professional organizations in the properties, characteristics and proper use of cement; in the improvement of methods, equipment and appliances tending toward improved efficiency and economy; the seasonal use of cement, especially in winter weather, important in its relation to continuity of employment of labor and the elimination of "peaks" and "depressions" and the spread of manufacture and distribution more evenly.

New Federal Law for Public Contracts

Cutting "red tape" in government contracts, was the task assigned Mr. Gordon A. Ramsay, Chicago lawyer, when he was called to Washington by General Charles Gates Dawes, the first director of the Bureau of the Budget. Mr. Ramsay was appointed assistant to the director and his specific work was to become chairman of and to organize the Interdepartmental Board of Contracts and Adjustments. Rather a high-sounding name, but, in plain English, the board is trying to "humanize" contracts between the government and the people who do things for the government.

Mr. Ramsay has succeeded in securing the adoption of the first standardized government contract ever approved by Uncle Sam—a government lease, which is now used by all the departments where the government is a tenant, eliminating all of the unfair clauses heretofore included, notably the clause giving the government only the right to cancel without cause on 30 days' notice. The government's rent roll approximates $22,000,000 per year.

Under Mr. Ramsay's supervision, complications of the following have been completed: Decisions of the Supreme Court of the United States, the Court of Claims, the Attorney General and the Federal statutes relating to government contracts, also a tentative standardized work or construction contract, modernized as far as the present laws will permit, and similarly a tentative contract relating to supplies.

Mr. Ramsay and the board is working on a draft of a new public contract Federal law, suggestions regarding which he welcomes from contractors, architects and engineers with a view to ultimately having the contract procedure of the government as nearly in accord with that of commercial usage as possible.

Contractors Elect Officers

The following officers were elected at the fifth annual meeting of the Associated General Contractors of America in Chicago, January 26:

President — Frederick L. Cranford, Brooklyn, N. Y.

Vice-President-at-Large — A. S. Downey, Seattle, Wash.

Vice-Presidents — Leonard C. Wason, Boston; H. H. Wilson, Harrisburg, Pa.

Directors—W. A. Rowan, New York City; T. J. Baker, Milwaukee, Wis.; Henry Ericsson, Chicago; Natt MacDougal, Portland, Ore., and H. W. Baum, Salt Lake City.

The vice-presidents and the directors are to hold office until 1927.

TRADE LITERATURE

Deadening Quilt

Two booklets that should prove very interesting to architects and contractors have recently been published by Samuel Cabot, Inc., of Boston, Mass. One booklet of 28 pages describes in detail the various uses of Cabot's Deadening Quilt as a sound deadener. This material consists of a felt matting of cured eel-grass stitched with strong thread, securely fastened, between two layers of exceedingly strong, tough "Kraft" paper. The eel-grass fibres are long and flat and cross each other at every angle. This forms a thick, resilient cushion of small and irregular cells of dead air, confined by the ribbon of eel-grass. The structure thus built up—first a layer of matter and then a layer of air—makes an ideal muffler of noise. The sound waves are broken up and absorbed or dissipated. This material is used on buildings of all kinds, especially for musical studios, schools, apartment houses, bowling alleys, etc. The fire-resisting qualities and the non-decaying qualities of the "quilt" are both set forth and demonstrated.

The other booklet describes the use of Cabot's Quilt for Heat Installation. These booklets will be sent to any architect, engineer or contractor by writing to Samuel Cabot, Inc., Boston, Mass.

In addition to "Quilt," Samuel Cabot, Inc., manufactures creosote shingle stains, waterproof stucco and brick stain, Old Virginia white, Conservo wood preservative, roofing stains, mortar colors and damp proofing.

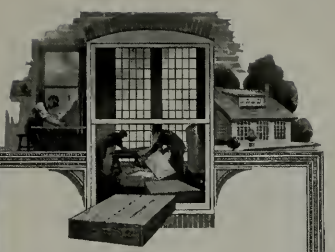
New Casement Window Catalogue

The Crittall Casement Window Company announces a new catalogue, No. 1-24 which illustrates Crittal Solid Steel Reversible Windows. These windows are made of rolled steel sections and are of a quality equivalent to Crittall casements. Their price is lower than the price of casements, as these windows are designed for use in office buildings, schools and hospitals where price is somewhat of a consideration. They are by no means a cheap window, however, as quality has always been the foremost aim with this concern.

While this window is not new, having been on the market for two years or more, this is the first catalogue that has been published concerning it.

Benjamin Industrial Lighting Equipment

The Benjamin Electric Mfg. Co., Chicago, has prepared a new bulletin of 80



THE STORY *the* GLAZING TELLS

THE charm of the completed home tells the story of the architect's care in specifying "The Best Glass." The cycle of satisfaction was assured by the thoughtfulness of the architect. The glazier and window frame manufacturer were able to exercise their craftsmanship to fullest degree and with greatest economy, and the contractor had the approval of a highly satisfied owner.

Our new method of flattening gives our glass a perfectly smooth surface, and a brilliant polish unequaled by any other window glass. Our glass has less wave than other glass, and consequently shows less distortion.

New and improved mechanical methods of drawing and blowing make possible the production of glass which is at once durable and easily glazed, being perfectly annealed, uniform in thickness and uniformly flat, without reverse curves. Packing in strong well-made boxes prevents breakage during shipment.

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GENERAL OFFICES PITTSBURGH, PA. BRANCHES IN PRINCIPAL CITIES

The big, new,

Standard Oil Building

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WEBSTER SYSTEM OF STEAM HEATING

—so are many other big, famous, popular buildings in this country and elsewhere heated with Webster Systems of Steam Heating. Inquire for full particulars.

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It "Back-Plasters" itself If you use National Steel Fabric Style P 214—a combined base and reinforcement for plaster, stucco and cement every trowel full of material will, automatically, "back-plaster" itself. *Write for our new catalog*

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Casement Window Operators

ALL WORK FROM INSIDE THE SCREENS

THE sash may be wood or metal. The screens may swing, slide or roll. No letting in of insects to open or close the casement. Convenient, unobtrusive, easy working. Made in 3 types and various finishes, to meet varying needs and costs.

Catalog No. 10 prepared especially for architects. Send for it.

The Casement Hardware Co
241 Pelouze Bldg., Chicago, Ill.

THIS APARTMENT HOUSE O'Farrell and Leavenworth Sts., San Francisco, designed by Architects Baumann & Jose, is equipped with

SCHROEDER VALVES

Manufactured by
SCHROEDER FLUSH VALVE CO.
Los Angeles Chicago San Francisco

pages, No. 52, devoted to Industrial Lighting Equipment.

In addition to the general catalogue material, there is an extensive series of illustrations showing the results of correct illumination in industrial plants of all types.

There is also a section devoted to the philosophy of good illumination as an industrial necessity, and essay on the discussion of the important points to consider, the use of charts, and a demonstration of making the more simple calculations for correct industrial illumination. Copies of the bulletin will be sent to architects, engineers and contractors by writing to the Benjamin Electric Mfg. Co., Chicago, or to 580 Howard street, San Francisco.

The Watchman That Never Sleeps

THE following news item, clipped from the Portland Oregonian, is as compact a lesson in effective fire-prevention as we have had the pleasure of reading:

The automatic sprinkler system at the Heywood-Wakefield furniture factory and wholesale house, Tenth and Irving streets, prevented a serious fire at that place early last night, when a box full of oily rags became ignited and scorched the wall. The heat melted the sensitive metal lock on the sprinkler above the blaze, letting loose a deluge of water and setting off the fire alarm in the building.

Edward Lursen, who was working in the office, notified the fire department and apparatus quickly arrived at the building. The firemen found the fire practically extinguished by the water from the sprinklers.

This system was installed by this company after its disastrous fire last April, when the interior of the factory was consumed by fire. Had it not been for the effective sprinkler a repetition of this might have easily occured, as no watchman was in the building last night.

Here we have all the ordinary elements—the warning of a disastrous fire; the following installation of an efficient sprinkler system; the prevention of another destructive fire. The extraordinary element would be the installation of a sprinkler system before, not after the fingers of destroying flame have pointed out the wisdom of such a course.

There is no better fire insurance than a properly installed sprinkler system. It is the one watchman that never sleeps. It deals with incipient blaze before the most alert and efficient fire department can get to it. Its whole cost may be said to be wiped out with its first preventative action.—Valve World.

Rapid Brick Construction

What was probably the speediest piece of face brick construction in San Francisco was recently finished in the building of the new twelve-story California hotel at Taylor and O'Farrell streets. It is said that the face brick work on this structure was finished in just twelve

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"Light Pattern" poles for ground setting.
"Standard" poles for ground setting.
"Standard" poles for setting through roofs.
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Send for Pole Book with specification data

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Newark, N. J.

Pacific Coast Representative:
H. M. HOLWAY, 1007 Hobart Bldg.
SAN FRANCISCO

and one-half days. The building on completion will represent a reported investment of $1,300,000. E. E. Young is the architect; Matthew A. Little, owner and builder; and Reed & Reed, masonry contractors. The face brick was manufactured by N. Clark & Sons.

Opens San Francisco Office

R. B. Bell & Co. of Los Angeles, who have been designing and manufacturing lighting fixtures for the past 12 years and who are representatives for Hope's steel casement windows, manufactured in England, have opened San Francisco offices and display rooms at 693 Sutter street. A recent development in Hope steel sash has been the introduction of standard sizes at prices which compare favorably with wood windows and which are carried in warehouse stock. The sash is particularly applicable to residences and apartment houses.

Moves to Larger Quarters

Jones Bros Asbestos Supply Co., Inc., distributors of the Philip Carey products, announce the removal of their offices and warehouse to larger quarters at 500 Second street, corner Bryant, San Francisco. The company's new telephone number is Douglas 7650.

Another Solar-Lite Installation

The Solar-Lite unit will be used throughout the new Fitzhugh Building, San Francisco. Reid Bros., Architects.

The Solar Lite is chosen by most architects because of its diffusion and quality of light. Some of the recent installations include Standard Oil Building, Oakland Bank of Savings.

D. DIERSSEN COMPANY

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Pacific Coast Branch Factory at Emeryville

Oil as Fuel for Heating Homes

By G. S. MILLER*

AS a home fuel it has long been felt that coal is basically unsatisfactory. It is often dirty and the manner of its delivery makes for dirt, and it is still more dirty in the coal bin. It burns and yields a fair degree of heat, but the ashes and the clinkers make the householder wonder whether, after all, he has gotten his money's worth. When spring comes the basement is due for a general overhauling—and everything else in the house. The whole year through the householder is paying tribute to coal and the dirt it spreads over everything.

A natural process of evolution has brought the use of oil to the fore as an ideal fuel. The broom has been replaced with the vacuum cleaner; the tallow candle and the oil lamp by the electric light. A good oil burner can produce nearly perfect combustion, distributing all the heat generated where it will do most good, operating in a cleanly fashion and without any waste or refuse.

Oil burners may be installed in any home-heating plant—whether steam, vapor, hot water or hot air. When properly installed they require no attention; are comparatively noiseless in their operation and are so well made as to be practically trouble-proof. Their operation can be controlled automatically through a thermostat in an upstairs room. Any desired degree of heat may be maintained within close limits by simply setting the thermostat at the temperature desired. It is as simple as switching on an electric light, and when one considers the advantage on a cold morning of not having to shake down a coal bed in the basement and snuff up an irritating amount of ash dust, there is small wonder that oil burners should enjoy the popularity they do. Those who have them in successful use know they are a clean, efficient and safe heating mechanism which can be depended upon at all times. Oil fuel can be used in any hot water, steam or vapor boiler, or in a hot-air furnace. The successful oil-burning mechanism must break up the oil properly—that is, mix the oil with the oxygen contained in the air in proper proportions, converting it into gas. The grade of oil best adapted to a burner requires consideration, so that one will not order fuel oil when he should use gas oil. Know the grade required for your burner and available in your locality and act accordingly.

*Manager Burner Department, W. S. Ray Manufacturing Co., San Francisco.

Fuel oil burners are built for very small boilers as well as large ones; hence they provide a ready means of supplying outlying building, such as garages, greenhouses, chicken houses, etc., where the temperature required may be different from the home. All such can have their individual temperature control, the burner only operating as needed.

The cost of heating homes by oil cannot be given in a general way, as the amount consumed depends, the same as any other kind of fuel, on the weather, local conditions and the latitude of the place where used.

A comparison with coal, however, offers a fairly close approximation that can be understood by the average home owner who has in most cases, good reason to remember the amount and price he has reluctantly parted with to obtain necessary heat.

A good grade of anthracite or bituminous coal contains around 14,000 B. T. U.'s to the pound, but due to poorly designed heating plants, soot covered heating surfaces and air infiltration, the average home heating plant rarely averages 50 per cent efficiency and most of the time closer to 30 or 40 per cent. With a well designed heating plant and a good oil burner properly installed in the same, one can often obtain efficiency of 60 to 70 per cent, with exercise of ordinary care. The average oil contains aproximately 140,000 B .T. U.'s per gallon, and with efficiency of 60 per cent would give 84,000 B. T. U.'s for heating purposes from a gallon of oil, which costs along the Pacific seaboard, at the present time, approximately 3 cents a gallon, more or less, depending on the distance from tidewater.

With coal having B. T. U. contents of 14,000 B. T. U.'s per pound, burned with an efficiency of 50 per cent, it would require about 12 pounds of coal to equal a gallon of oil, burned at 60 per cent. Allowing a cost of $20 a ton in the consumer's coal bin or a cent a pound, it would take 12½ cents worth of coal to equal in heat value the gallon of oil, with all the dirt, labor and annoyance attending on the firing of coal thrown in for good measure.

As the price of coal and the heat contents of same vary in different parts of the country, each consumer will have to estimate his own cost for these different fuels, but for a rough approximation, 125 to 150 gallons of oil will equal a ton of coal burned under the average conditions of household use.

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Pacific Rolling Mill Co.

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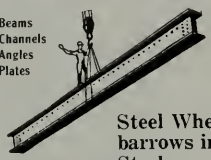

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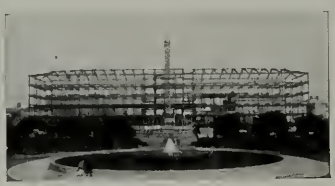
Phones: GARFIELD 2575—2576



Bliss & Faville, Architects

Steel Frame, California State Building, Civic Center, San Francisco.

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Magnesia and Asbestos Pipe and Boiler Coverings
Cold Storage Insulation—Sectional Expansion Paving Joint
"Linofelt" Sound Deadener—Wall Board
Cork Pipe Covering, Board and Granulated Cork

21-29 South Park
Bet. 2nd and 3rd Sts.

San Francisco, Cal.

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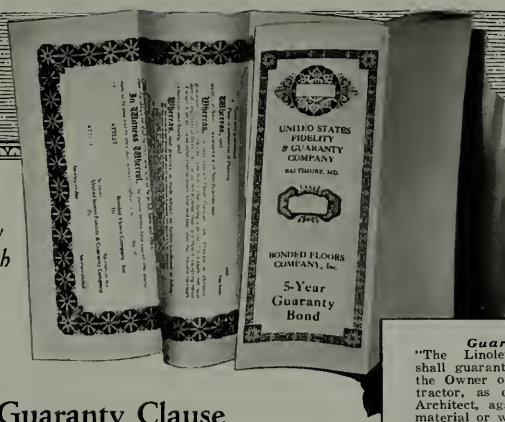

"A surety bond with every floor"

Guarantee*

"The Linoleum Contractor shall guarantee his work to the Owner or General Contractor, as directed by the Architect, against defects of material or workmanship for a period of five years from date of acceptance by the Architect, and shall, on receipt of written notice from the Owner, make—at his own expense—any repairs that may be necessary, except repairs of injury from any cause other than ordinary wear and tear, and shall furnish a surety bond in the full amount of the contract covering the performance of this guarantee."

**(From our linoleum specification)*

Every Bonded Floor is protected by a Guaranty Bond issued by the U. S. Fidelity and Guaranty Company.

All our battleship linoleum floors are **Gold-Seal** Battleship Linoleum, guaranteed satisfactory by the manufacturer.

The Guaranty Clause in your linoleum specification--

THE one-year guaranty generally written into building specifications is adequate, no doubt, for general construction work. But it isn't adequate for battleship linoleum floors.

Experience proves that even a very inferior battleship linoleum floor will go through the first year of service without defects becoming apparent. It's later years that tell the story of poor materials and workmanship.

A specification, however carefully it is prepared, cannot in itself prevent substitution of inferior materials or faulty installation by an unscrupulous contractor.

There is one absolutely sure way, however, to safe-guard your clients' flooring investment. That is to stipulate in your specification that the contractor shall furnish a 5-year Guaranty Bond for the full amount of the contract.

Any reputable flooring contractor will agree that you are fully justified in demanding this assurance of quality in the battleship linoleum floors he installs. If he objects—look out!

As the largest concern in the country specializing in the installation of resilient floors, we are vitally interested in the service rendered by all floors of this type, whether installed by us or not. Our flooring engineers will gladly give you the benefit of their wide experience in the solution of any troublesome flooring problems. This service involves no obligation whatever. Write or telephone our nearest office.

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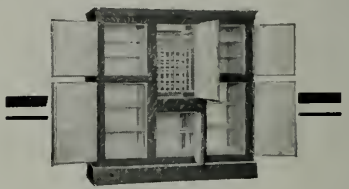

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Specify
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A Philippine hardwood that lends itself to practically any colored stain. LAMAO finishes a beautiful walnut or Oak and when finished as Mahogany, it is hard to tell it from Honduras Mahogany.

The additional expense of using LAMAO trim in the average home instead of softwoods is very nominal and it materially increases the value of the home.

Write for comparative costs and samples.

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Perfect Heat — Automatic Control
No Odor — Normal Humidity

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Present Cost of Building Materials

THESE quotations are based on reliable information furnished by the San Francisco material houses. Date of quotations, February, 1924.

All prices San Francisco or Oakland. For country work add freight and cartage to prices given.

Bond—1½% amount of contract.

Brickwork—
Common, $35.00 per 1000 laid.
Face, $75.00 per 1000 laid.
Enamel, $150.00 per 1000 laid.
Common, f. o. b. cars, $15.50, plus cartage.
Face, f. o. b. cars, $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f. o. b. cars in carload lots.)

12x12x3 in.	$ 96.00 per M
12x12x4 in.	108.00 per M
12x12x6 in.	156.00 per M
12x12x8 in.	243.75 per M

Hod carriers, $6.50 per day.
Bricklayers, $10.00 per day.
Lime—$2.25 per bbl.; carload, $2.15

HOLLOW BUILDING TILE f. o. b. cars in carload lots.)

8x11½x5½	$108.00
6x11½x5½	85.00

Composition Floors—24c to 50c per sq. ft. In large quantities, 24c per sq. ft.

Composition Stucco—$1.90 to $2.10 per sq. yard (applied).

Concrete Work (material at San Francisco bunkers)—

No. 3 rock	$2.15 per yd.
No. 4 rock	2.30 per yd.
Niles pea gravel	3.50 per yd.
Niles gravel	2.35 per yd.
Niles top gravel	2.75 per yd.
City gravel	2.15 per yd.
River sand	1.75 per yd.
Delivered bank sand	1.00 per yd.

SAND
Del Monte.. ....$1.25 to $1.50 per ton
Fan Shell Beach (Car lots, f. o. b. Lake Majella).... $2.50 to $3.00 per ton
Swedish cement....$2.68 per bbl.
Belgian cement.... 2.65 per bbl.
Cement (f. o. b. cars)..... 3.01 per bbl.
Rebate for sacks, 10c each.

Atlas "White"	$ 9.75 per bbl.
Medusa "White"	$ 9.95 per bbl.

Forms, Labors average....$30.00 per M
Wage—

Concrete workers	$5.00 per day
Cement finishers	8.50 per day
Laborers	5.00 per day

Dampproofing—
Two-coat work, 25c per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $5.00 per square.
Hot coating work, $2.00 per square.
Wage—Roofers, $8.00 per day.

Electric Wiring—$6.00 to $10.00 per outlet for conduit work (including switches).
Knob and tube average $3.00 to $5.50 per outlet.
Wage—Electricians, $8.00 per day.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in 4-story bldg., $3250; direct automatic, about $3000.

Excavation—
$1.25 per yard, if sand. Teams, $10.00 per day. Trucks, $21 to $27.50 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $105.00 per balcony.

Glass—(Consult with manufacturers.)
21 ounce, 16c per square foot.
Plate, $1.10 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 30c per sq. ft.
Obscure glass, 28c per square foot.
Note—Add extra for setting.
Wage—Glaziers, $8.00 per day.

Heating—
Average, $2.25 per sq. ft. of radiation, according to conditions.
Wage—Steamfitters, $9.00 per day.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.
Wage—Iron workers, bridge and structural, $9.00 per day.
Architectural iron workers, $7.00 per day.

Lumber—(Prices delivered to bldg. site)
Common, $37.00 per M (average).
Com'n O.P. (select, avrg.....$42.50 per M
Flooring—

1 x 6 No. 3—Form lumber	$25.00 per M
1 x 4 No. 1 flooring	68.00 per M
1 x 4 No. 2 flooring	62.00 per M
1 x 4 No. 3 flooring	48.00 per M
1 x 6 No. 2 and better flooring	62.00 per M
1¼ x 4 and 6 No. 2 flooring	65.00 per M

Slash grain—

1 x 4 No. 2 flooring	56.00 per M
1 x 4 No. 3 flooring	50.00 per M

No. 1 common run to

T. & G.	$38.00 per 1000
Lath	6.00 per 1000

Shingles—(Add cartage to prices quoted)

Redwood, No. 1	$1.10 per bdle.
Redwood, No. 2	.90 per bdle.
Red Cedar	1.25 per bdle.

Building Paper—

1 ply per 1000 ft. roll....	$6.25
2 ply per 1000 ft. roll.....	9.60
3 ply per 1000 ft. roll.....	14.55
Sash cord com. No. 7.....	1.25 per 100 ft.
Sash cord com. No. 8.....	1.40 per 100 ft.
Sash cord spot No. 7.....	1.90 per 100 ft.
Sash cord spot No. 8.....	2.30 per 100 ft.
Sash weights cast iron..	60.00 Ton
Nails, $4.25 base.	

Hardwood Flooring—

⅜x3¼" T & G Maple	$137 M ft.
1⅛x2¼" T & G Maple	140 M ft.
⅞x3½ Sq. Edge Maple	116 M ft.

	⅜x2¼" T&G	⅝x2" T&G	⅝x2" Sq. Ed
Clr. Qtd. Oak	$179 M	$124.00 M	$156 M
Sel. Qtd. Oak	135 M	92.50 M	114 M
Clr. Pla. Oak	140 M	92.50 M	114 M
Sel. Pla. Oak	124 M	80.00 M	97 M
Clear Maple	135 M	81.00 M	
Orion	140 M	100.00 M	100 M
Bagac	130 M	90.00 M	90 M
Laying and Finishing	16c ft.	15c ft.	13c ft.

N. B.—Materials and labor are plentiful at present time.

Wage—Floor layers $9.35 per day.

Millwork—
O. P., $100 and up per 1000. R. W., $120 and up per 1000.
Double hung box window frames, average) with trim, $8.00 and up, each.
Doors, including trim (single panel), $10.50 and up, each.
Doors, including trim (five panel), $8.50 each.
Screen doors, $3.50 each.
Cases for kitchen pantries seven feet high, per lineal foot, $7.50 each.
Dining room cases, $8.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average) $16 per m.
For smaller work, average, $28.00 to $35.00 per 1000.
Wage—Carpenters, $8.00 per day.
Laborers—$5.00 per day.

Marble—(Not set), add 40c to 60c per ft. for setting.

Columbia	$1.60 sq. ft.
Alaska	1.60 sq. ft.
San Saba	3.15 sq. ft.
Tennessee	2.00 sq. ft.
Verde Antique	3.75 sq. ft.
Westfield Green	3.50 sq. ft.

Wages—Marble setters, $8.00 per day; helpers, $5.50 per day. Marble polishers and finishers, $6.00 per day.

Painting—

Two-coat work	30c per yard
Three-coat work	45c per yard
Whitewashing	5c per yard
Cold water painting	9c per yard

Turpentine, $1.20 per gal. in cases and $1.05 per gal. in tanks.
Raw Linseed oil....$1.05 per gal. in bbls.
Boiled Linseed Oil.. 1.10 per gal. in bbls.
Pioneer white and red lead, 11¾c lb. in one-ton purchases; 12c lb. for less than 500 lbs.
Wage—Painters, $8.00 per day.
Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.50 lineal foot
8-inch	1.75 lineal foot
10-inch	2.25 lineal foot
12-inch	3.00 lineal foot

Pipe Casings—14" (average), $7.50 each.

Plastering—(Including Lathing)
Interior, on wood lath, 65c per yard.
Interior, on metal lath, $1.25 per yard.
Exterior, on brick or concrete, $1.30 per yard.
Portland White, $1.75.
Interior on brick or terra cotta, 60c to 70c per yard.
Exterior, on metal lath, $1.85 to $2.25 per yard.
Wood lath, $7.00 a yard per 1000.
Metal studding, $1.25 to $1.50 per yard.
Suspended ceiling and walls (metal furring, lathing and plastering), $2.00 per yard.
Galv. metal lath, 33c and up per yard, according to gauge and weight.
Lime, f. o. b. S. F. warehouse, $2.50 bbl.
Lime, bulk, per ton of 2000 lbs., $19.50
Hardwall plaster, $15.40 per ton, f. o. b. warehouse. (Rebate on sacks, 15c.)
Finishing plaster (carload lots), $19.00.
Hydrate of lime, $19.50 per ton, f. o. b. warehouse.
Wage—Plasterers, $10.00 per day.
Lathers, $8.00 per day.
Hod carriers, $7.00 per day.

Plumbing—
From $70.00 per fixture up, according to grade, quantity and runs.
Wage—Plumbers, $9.00 per day.

Reinforcing Steel—
Base price for car load lots, $3.80 per 100 lbs., f. o. b. cars on docks.
Average cost to install, $25 per ton.
Wage—Housesmiths, $8.00 per day.

Roofing—
Five-ply tar and gravel, $6.00 per square for 30 squares or over.
Less than 30 squares, $6.25 per square.
Tile, $35.00 to $50.00 per square.
Redwood Shingles, $12.00 per square in place.
Cedar Shingles, $12.00 per sq. in place.
Reinf'd Pabco, 7 yr. roof, $7.50 per sq.
Reinf'd Pabco, 10 yr. roof, $10.25 per sq.
Reinf'd Pabco, 20 yr. roof, $13.50 per sq.
Recoat, with Gravel, $3.00 per square.
Wage—Roofers, $8.00 per day.

Sheet Metal—
Windows—Metal, $2.00 a square foot.
Fire doors, (average), including hardware, $2.30 per sq. ft.

Skylights—
Copper,$1.25 a square foot (not glazed)
Galvanized iron, 35c a square foot (not glazed).
Wage—Sheet metal workers, $8.50 per day.

Stone—
Granite, average $7.50 sq. ft. in place.
Sandstone, average Blue, $4.75; Bosie, $2.80 sq. ft. in place.
Indiana Limestone, $3.00 per sq. ft. in place.
Wage—Stone cutters, $8.00 per day.
Stone setters, $8.50 per day.

Store Fronts—
Copper sash bars for store fronts, corner, center and around sides, will average 85c per lin. ft.
Note—Consult with agents.

Structural Steel—$112 per ton (erected).
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.
Cost of steel for average building (erected), $108 per ton.

Steel Sash—
All makes, from S. F. stock, 26c to 34c per sq. ft.
All makes, plant shipment, 28c to 34c per sq. ft.
(Includes mullions and hardware.)

Tile—White glazed, 80c per foot.
White floor, 80c per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $1.00 per sq. ft. laid.
Wage—Tilesetters, $8.50 per day.

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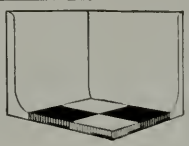

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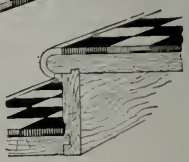

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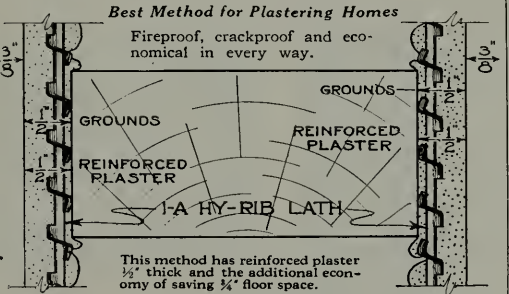

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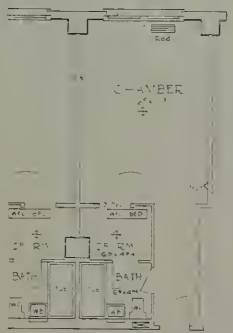

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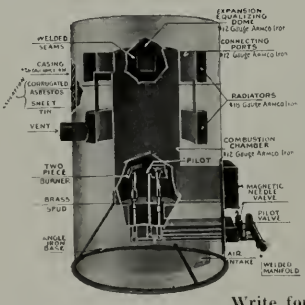

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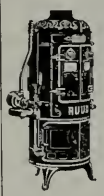

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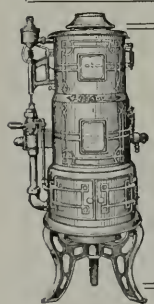

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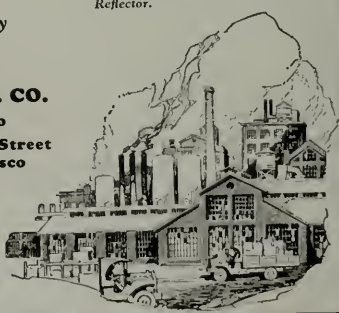

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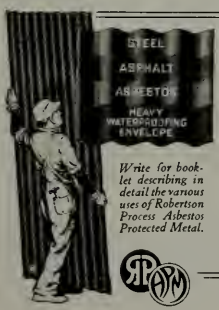

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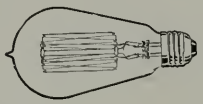

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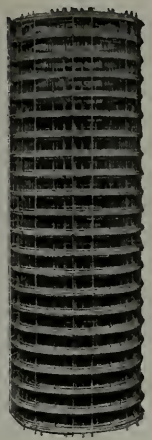

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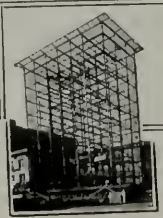

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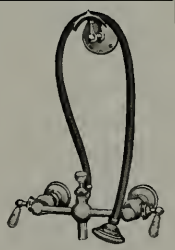

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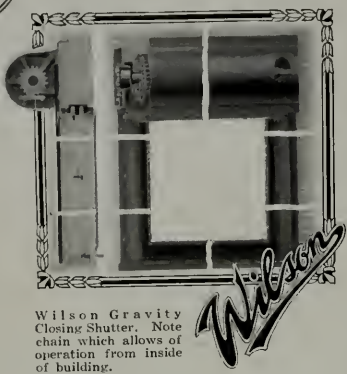

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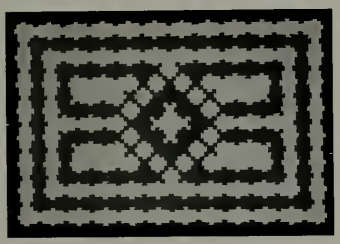

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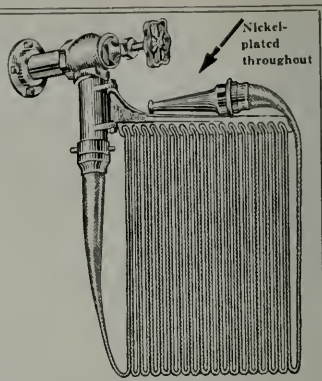

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Main Iron Works, 1000 Sixteenth Street, San Francisco.

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Cement Gun Construction Co., Hobart Building, San Francisco.

CEMENT—WATERPROOF
Monolith Portland Cement Co., 215 W. 7th St., Los Angeles, and 800 Claus Spreckels Building, San Francisco.

CEMENT STUCCO
"California" sold by California Stucco Products Company, Holbrook building, San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CLAY PRODUCTS
N. Clark & Sons, 116 Natoma St., San Francisco.
California Brick Co. and Livermore Fire Brick Works, 604 Mission St., San Francisco.
Cannon & Co., Sacramento, Cal.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
Tropico Potteries, Inc., Glendale, Cal.
United Materials Co., Sharon Bldg., San Francisco.

CLOCKS—ELECTRIC TIME
Standard Electric Time Co., 461 Market St., San Francisco.
Pacific Electric Clock Company, 86 Third St., San Francisco.

COLD STORAGE PLANTS
Cyclops Iron Works, 837 Folsom St., San Francisco.

CONCRETE CONSTRUCTION
Vannucci Bros., 16th and Church Streets, San Francisco.
Villadsen Bros., Inc., 749 Monadnock Building, San Francisco.

COMPOSITION FLOORS
"Linotol" plastic flooring, Hill, Hubbell & Co., 115 Davis St., San Francisco; 410 San Fernando Bldg., Los Angeles.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.

CONCRETE OR CEMENT HARDENER
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco

CONCRETE MIXERS
Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.

CONCRETE REINFORCEMENT
Edw. L. Soule Co., Rialto Bldg., San Francisco.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Clinton Welded Wire Fabric, Wickwire Spencer Steel Corporation, 144 Townsend St., San Francisco.
Judson Mfg. Co., 817-821 Folsom St., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Triangle Mesh Fabric, Sales agents, Pacific Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., 709 Mission St., San Francisco.
Badt-Falk Co., Call-Post Bldg., San Francisco.

CONDUITS
"Sherarduct," Garnett Young & Company, 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
Hansen, Robertson & Zumwalt, 4145 Broadway, Oakland.
Barrett & Hilp, 918 Harrison St., San Francisco.
Herbert Beckwith, Everson Bldg., Oakland.
Larsen-Siegriat Co., Inc., 807 Claus Spreckels Bldg., San Francisco.
Lindgren-Swinerton, Inc., Standard Oil Building, San Francisco

SATINETTE WHITE ENAMEL

FLATTINE CABINET FINISH
ELASTICA INTERIOR AND ELASTICA EXTERIOR

Standard Varnish Works

55 STEVENSON STREET — SAN FRANCISCO

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"Quality First"

ELECTRICAL CONSTRUCTION

CONTRACTING . WIRING . FIXTURES MOTORS . SUPPLIES . REPAIRING

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ARCHITECTS' SPECIFICATION INDEX—Continued

R. W. Littlefield, 357-12th St., Oakland.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Dinwiddie Construction Co., Crocker Bldg., San Francisco.
John M. Bartlett, 357 Twelfth St., Oakland.
Clinton Construction Company, 923 Folsom St., San Francisco.
Monson Bros., 251 Kearny St., San Francisco.
Geo. Wagner, Park Ave., San Francisco.
McLeran & Co., R., Hearst Bldg., San Francisco.
Vukicevich & Bagge, 815 Bryant St., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.
I. M. Sommer, 401 Balboa Bldg., San Francisco.
Jas. L. McLaughlin, 251 Kearny St., San Francisco.
Alfred H. Vogt, 185 Stevenson St., San Francisco.
Carl T. Peterson, 185 Stevenson St., San Francisco.

CONTRACTORS' EQUIPMENT
Edward R. Bacon Co., Folsom at 17th St., San Francisco, and Los Angeles.

CONVENIENCE OUTLETS
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St.

CORK TILE
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.
David E. Kennedy, Sharon building, San Francisco, and Story building, Los Angeles.

CORK TILE FOR FLOORS
Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles, St., Los Angeles.
David E. Kennedy, Sharon Building, San Francisco, Story Building, Los Angeles.

CRUSHED ROCK
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.

DAMP-PROOFING AND WATERPROOFING
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
"Imperial," manufactured by Brooks & Doerr, Merchants National Bank Building. San Francisco.
Minwax Co., Inc., 22 Battery St., San Francisco, and 653 S. Clarence St., Los Angeles.
Samuel Cabot Co., Boston; represented in San Francisco by Pacific Materials Co., Underwood Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by the Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco

DOOR HANGERS
Pitcher Hanger, sold by National Mill & Lumber Co., 326 Market St., San Francisco.
Richard-Wilcox Mfg. Co., the Ewing-Lewis Co., 626 Underwood Building, San Francisco.
Stanley Works, New Britain, Conn... Monadnock Bldg., San Francisco.

DRAIN PIPE AND FITTINGS
"Corrosiron" Acid Proof, manufactured by Pacific Foundry Co., Harrison and 18th Sts., San Francisco.

DRAIN TILE
California Brick Company, 604 Mission Street, San Francisco.

DRINKING FOUNTAINS
Hawa Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 166-7th St., San Francisco.
San Francisco Elevator Company, Inc., 860 Folsom St., San Francisco.
Elevator Supplies Co., Inc., Hoboken, N. J.; San Francisco office, 186 Fifth St.
"Chelsea" dumb waiters, sold by M. E. Hammond, Pacific building, San Francisco.

ELECTRICAL CONTRACTORS
Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 956 Folsom St., San Francisco.
Central Electric Company, 177-79 Minna St., San Francisco
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Brown-Langlais Electrical Construction Co., 315 Fifth Street, San Francisco.
Newberry Electric Company, Alta Bldg., San Francisco
Smith Electric Company, 50 Natoma St., San Francisco.
Decker Electrical Construction Company, 149 New Montgomery St., San Francisco.
Electric Construction Company, 616 Broadway, Fresno.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Pacific Bldg., San Francisco.

ELECTRICAL PLUGS, RECEPTICALS, ETC.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
"H. & H. Switches," Garnett Young & Co., 612 Howard St., San Francisco.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St.
Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.
Trumbull Electric Mfg. Co., Plainville, Conn. and 595 Mission Street, San Francisco.

Los Angeles, 871-164 S. F. Phone, Garfield 204

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Fire Protection Engineers

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TOLEDO SCALE CO.
SAN FRANCISCO California

ARCHITECTS' SPECIFICATION INDEX—Continued

ELECTRIC SAFETY INTERLOCKS
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.
ELECTRIC HEATING
Wesix Electric Heaters, manufactured by W. Wesley Hicks, Rialto Building, San Francisco.
"Glolog" manufactured by Strait & Richards, Inc., Newark, N. J., represented by Atlantic Pacific Agencies Corporation, 204 Rialto Building, San Francisco.
ELEVATORS—PASSENGER and FREIGHT
Pacific Elevator & Equipment Co., 1129 Howard Street, San Francisco.
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 166-7th St., San Francisco.
San Francisco Elevator Co., 860 Folsom St., San Francisco.
Van Emon Elevator Company, 1159 Howard St., San Francisco.
ELEVATOR MOTORS AND CONTROL
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and First National Bank Bldg., San Francisco, Calif.
ELEVATOR SIGNALS, DOOR EQUIPMENT
Elevator Supplies Co., Inc., Hoboken, N. J.; San Francisco office, 186 Fifth St.
Randall Control & Hydrometric Corporation, 265A Minna St., San Francisco, and 523 Central Bldg., Los Angeles.
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.
ENGINEERS — CONSULTING, ELECTRICAL, MECHANICAL
Hunter & Hudson, Rialto Bldg., San Francisco.
Robert L. St. John, 1011 Flat Iron Bldg., San Francisco
Charles T. Phillips Company, Bank of Italy Bldg., San Francisco, and Roberts Bldg., Los Angeles.
FAIENCE TILE
Tropico Potteries, Inc., Glendale, Cal.
FELTS
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.
FENCES—WIRE AND IRON
Standard Fence Company, 432 Bryant, San Francisco and 60th and Lowell Sts., Oakland.
FIRE BRICK, TILE & CLAY
Livermore Fire Brick Works, 604 Mission St., San Francisco.
FIRE EXIT LATCHES
Vonnegut Hardware Co., Indianapolis, Ind., represented in San Francisco by C. H. Jensen Co., Call Building.
FIRE ESCAPES
Michel & Pfeffer Iron Works, 1415 Harrison St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.
FIRE HOSE RACKS
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.
FIRE-PROOF DOORS
Forderer Cornice Works, 269 Potrero Ave., San Francisco.
U. S. Metal Products Co., 330-10th St., San Francisco.
Kinnear Mfg. Co., represented in San Francisco by Pacific Materials Co., Underwood Bldg.
The J. G. Wilson Corporation, Call-Post Building, San Francisco, and 621 North Broadway, Los Angeles.
FIRE SPRINKLERS—AUTOMATIC
Fire Protection Engineering Co., 142 Sansome St., San Francisco.
Grinnell Company of the Pacific, 453 Mission St., San Francisco.
Independent Automatic Sprinkler Co., 72 Natoma St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
FIRE RETARDING PAINT
The Paraffine Companies, Inc., 34 First St., San Francisco.
FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Company, 218-13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.
FLAG POLES—STEEL
Pole & Tube Works, Newark, N. J., represented by H. M. Holway, 1007 Hobart Building, San Francisco, and 600 Metropolitan Building, Los Angeles.
FLOORS, BLOCK
Carter, Bloxonend Flooring Co., Kansas, Mo., represented on Pacific Coast by H. M. Holway, 1007 Hobart Building, San Francisco.
FLOOR CLIPS
Bull Dog Floor Clip Sales Co., 77 O'Farrell St., San Francisco, and 600 Metropolitan Bldg., Los Angeles.
Grip-Tite floor anchors, Cheek & Gillis, 625 Call Building, San Francisco.
FLOORING, HEAVY DUTY
Carter, Bloxonend Flooring Co., Kansas, Mo., represented on Pacific Coast by H. M. Holway, 1007 Hobart Building, San Francisco.
FLOORS—TILE, CORK, ETC.
Mangrum & Otter, 827 Mission St., San Francisco.
FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, 55 Stevenson Street, San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.
FLOORS—HARDWOOD
Oak Flooring Bureau, Ashland Block, Chicago, Ill.
Cadwallader, Gibson Co., 5th & Brannan St., San Francisco.
Parrott & Co., 320 California St., San Francisco.

THE PELTON WATER WHEEL CO.
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Heavy-Duty Pumps for Municipal and General Water Supply
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PORTLAND 151 Potrero Ave.—SAN FRANCISCO—436 Market St. SEATTLE

ARCHITECTS' SPECIFICATION INDEX—Continued

Strable Hardwood Company, 511 First St., Oakland.
E. L. Bruce Co., Manufacturers, Memphis, Tenn.
J. E. Higgins Lumber Company, 423 Sixth St., San Francisco.

FLOOR TREATMENT—HARDWOOD, COMPOSITION AND CONCRETE
Minwax Co., Inc., 22 Battery St., San Francisco and 653 S. Clarence St., Los Angeles.

FLOORS—MASTIC—FLOOR COVERING
Hill, Hubbell & Company, 115 Davis St., San Francisco.
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

FLUE LINING
California Brick Company, 604 Mission St., San Francisco.

FLUSH VALVES
Handy Self-Cleaning Flush Valve Co., 731 Folsom St. San Francisco.
Shroeder Flush Valve Company, 1300 N. Main Street, Los Angeles and 16 Steuart Street, San Francisco.

FUEL OIL SYSTEMS
S. T. Johnson Co., 1337 Mission St., San Francisco.
S. F. Bowser & Co. Inc., 612 Howard St., San Francisco.
Wayne Tank and Oil Co., 430 Fourth St., San Francisco.

FURNACES—WARM AIR
Mangrum & Ottee, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.
C. B. Babcock Company, 768 Mission St., San Francisco.

FURNITURE—OFFICE, SCHOOL, CHURCH,
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., Second and Mission Sts., San Francisco.
W. & J. Sloane, 216 Sutter St., San Francisco.
Western States Seating Co., 39 Second St., San Francisco.
H. Rumph, 567 Howard St., San Francisco.
Fink & Schindler Company, 218-19th St., San Francisco.

FURRING TILE (Burned Clay)
California Brick Company, 604 Mission St., San Francisco.

GARAGE HARDWARE
The Stanley Works, New Britain, Conn., Coast sale offices, San Francisco, Los Angeles and Seattle, Wash.
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.

GAS HEATING
Pittsburg Water Heater Company, 478 Sutter St., San Francisco.
Ruud Automatic Water Heater, sold by Ruud Heater Company, 431 Sutter St., San Francisco.
C. B. Babcock Company, representing General Gas Light Company, 768 Mission St., San Francisco.

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 862 Mission St., San Francisco.
Cobbledick-Kibbe Glass Co., 666 Howard St., San Francisco.
Fuller & Goepp, 32 Page St., San Francisco, and Jackson, at Eleventh St., Oakland.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.

GRANITE
Raymond Granite Co., Potrero Ave., and Division St., San Francisco.

GRAVEL AND SAND
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

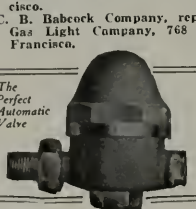
GYMNASIUM EQUIPMENT—LOCKERS, ETC.
Ellery Arms Co., 583 Market St., San Francisco.

HARDWALL PLASTER
"Empire," manufactured by Pacific Portland Cement Co., Pacific Building, San Francisco; Portland, San Jose and Los Angeles.

HARDWARE
Joost Bros., agents for Russell & Erwin Hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn.; Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
Corbin hardware, sold by Palace Hardware Co., 581 Market St., San Francisco.
Vonnegut hardware, sold by G. H. Jensen Co., Call Bldg., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill.; Ewing-Lewis Co., 626 Underwood Building, San Francisco.

HEATING AND VENTILATING CONTRACTORS
Atlas Heating and Ventilating Company, Inc., Fourth and Freelon Sts., San Francisco.
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Lawaan & Drucker, 450 Hayes St., San Francisco.
Lupen and Hawley, 906 7th St., Sacramento.
William F. Wilson Co., 328 Mason St., San Francisco.
W. H. Picard, 5656 College Ave., Oakland.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
H. G. Newman Co., 2004 Telegraph Ave., Oakland.

HEATING & VENTILATING EQUIPMENT
W. S. Haines & Co.'s steam specialties. O. M. Simmons Company, 115 Mission St., San Francisco.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ARCHITECTS' SPECIFICATION INDEX—Continued

Hulting, Hurst & Hulting, representing Jas. P. Marsh Co., Monadnock Bldg., San Francisco.
C. A. Dunham, Chicago, Illinois; 585 Mission Street, San Francisco, and 119 E. 3rd Street, Los Angeles.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.
Illinois Engineering Co., 417 Market St., San Francisco.
Williams Radiator Company, 571 Mission St., San Francisco.
Warren Webster & Company, Sharon Building, San Francisco.

HEATERS, GAS GRATES, RADIATORS, ETC.
General Gas Light Company, 768 Mission St., San Francisco.
Ra-Do Fumeless Gas Radiators, Potter Radiator Corporation, 478 Sutter St., San Francisco
Humphrey Radiantfire, sold by Rudd Heater Company, 431 Sutter St., San Francisco.
Pacific Gas Steam Radiator Company, "Gas Steam Radiators," 571 Mission Street, San Francisco.
McLaughlin Metal Works, 223 J St., Sacramento.

HOLLOW BUILDING TILE (Burned Clay)
California Brick Company, 604 Mission St., San Francisco.

HOLLOW TILE BLOCKS
Cannon & Co., plant at Sacramento; 77 O'Farrell St., San Francisco.
California Brick Company, 604 Mission St., San Francisco.
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

HOSE—UNDERWRITERS UNLINED LINEN—RUBBER
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEMS
Chicago Signal Co., represented by Garnett Young & Co., 612 Howard St., San Francisco.

HOTELS
St. Francis Hotel, Powell and Post Streets, San Francisco.

ICE MAKING MACHINERY
Cyclops Iron Works, 837 Folsom St., San Francisco.
"Frigedaire," Sold by W. L. Cochran, 880 Mission St., San Francisco.

INCINERATORS
The Incinerite, sold by M. E. Hammond, Mezzanine, Pacific Building, San Francisco.

INDUSTRIAL LIGHTING EQUIPMENT
Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., and First National Bank Building, San Francisco.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and 10th and Bryant Sts., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.

JAIL EQUIPMENT
Ralston Iron Works, 20th and Indiana Sts., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE ARCHITECT
Emerson Knight, 704 Market St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 514-516 Phelan Bldg., San Francisco.

LATHING AND PLASTERING
MacGruer & Simpson, 226 Tehama St., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.

LATHING MATERIAL—WIRE, METAL, ETC.
Pacific Materials Co., 525 Market St., San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco
Truscon Steel Co., 709 Mission Street, San Francisco.
Wickwire Spencer Steel Corporation, 144 Townsend St., San Francisco.
United Alloy Steel Corporation, Canton, Ohio; Western Sales Office, Santa Fe Building, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.
Pacific Gas & Electric Co., Sutter St., San Francisco.

LIGHTING FIXTURES
Benjamin Electric Mfg. Co., New York, Chicago, 580 Howard St., San Francisco.
D. Dicrasen Co., 20 Second Street, San Francisco. Distributora Solar-Lite fixtures.
Roberts Mfg. Co., 663 Mission St., San Francisco.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St., San Francisco.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.

LIMESTONE, INDIANA
Indiana Limestone Quarrymen's Association, Box 770, Bedford, Indiana.

LINOLEUM
D. N. & E. Walter & Co., 562 Mission St., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.
W. & J. Sloane, 216 Sutter St., San Francisco.
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.

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VILLADSEN BROTHERS
INCORPORATED
ENGINEERS & CONTRACTORS
HUNTINGTON BLDG. SAN FRANCISCO

ARCHITECTS' SPECIFICATION INDEX—Continued

Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles St., Los Angeles.

LINOTILE
- Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.

LUMBER
- Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
- Pacific Manufacturing Company, San Francisco, Oakland, Los Angeles and Santa Clara.
- Pope & Talbot, foot of Third St., San Francisco.
- Santa Fe Lumber Co., 16 California St., San Francisco.
- J. E. Higgins Lumber Company, 423 Sixth St., San Francisco.
- Sunset Lumber Company, First and Oak Sts., Oakland.

LUMBER—HARDWOOD
- Davis Hardwood Co., Bay and Mission Streets, San Francisco.

MANTELS—WOOD, TILE, ETC.
- Mangrum & Otter, 827-831 Mission St., San Francisco.

MARBLE
- American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
- Ray Cook Marble Company, foot of Powell St., Oakland.
- Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
- Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.
- Tompkins-Kiel Marble Company, 505 Fifth Ave., New York; also Chicago, Philadelphia and San Francisco.
- Columbia Marble Co., 413 Rialto Bldg., San Francisco.

METAL DOORS AND WINDOWS
- Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
- U. S. Metal Products Co., 330 Tenth St., San Francisco.
- Forderer Cornice Works, 269 Potrero Ave., San Francisco.
- Michel & Pfeffer, Harrison and Tenth Streets, San Francisco.

METAL FURNITURE
- Forderer Cornice Works, 269 Potrero Ave., San Francisco.
- United Alloy Steel Corporation, Canton, Ohio; Western Sales Office, Santa Fe Building, San Francisco.

METAL STORE FRONTS
- Cobbledick-Kibbe Glass Company, 666-8 Howard street, San Francisco, and Washington at Third St., Oakland.

METAL TRIM
- Knapp Bros. Manufacturing Co., 625 Call Building, San Francisco.

MILL WORK
- Pacific Manufacturing Company, San Francisco, Los Angeles, Oakland and Santa Clara.
- National Mill and Lumber Co., San Francisco and Oakland.
- Lannom Bros. Mfg. Co., 5th and Magnolia Sts., Oakland.
- The Fink & Schindler Company, 218-13th St., San Francisco.

OIL BURNERS
- Bunting Iron Works, 1215 First Nat. Bank Bldg., San Francisco.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.
- W. S. Ray Mfg. Company, Rialto Bldg., San Francisco, and 2206 San Pablo Ave., Oakland.
- Rotary Oil Burner Company, 159 Twelfth St., Oakland.

OIL STORAGE AND DISTRIBUTING STATIONS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- Wayne Oil Tank & Pump Co., 430 Fourth St., San Francisco; 830 S. Los Angeles St., Los Angeles.

ORNAMENTAL IRON AND BRONZE
- California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
- Federal Ornamental Iron and Bronze Co., 16th St., and San Bruno Ave., San Francisco.
- Michel & Pfeffer Iron Works, 1415 Harrison St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

PANEL BOARDS
- Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.

PANIC DOORS
- Vonnegut hardware, sold by C. H. Jensen Co., Call Bldg., San Francisco.

PAINT FOR CEMENT AND STUCCO
- Wadsworth, Howland & Co., Inc., Jas. Hambly & Son, 1333 E. 7th St., Los Angeles, and 229 Clay St., San Francisco.

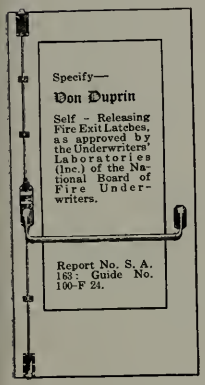
PAINT FOR STEEL STRUCTURES, BRIDGES
- The Paraline Companies, Inc., 34 First St., San Francisco.
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
- Hill, Hubbell & Company, 115 Davis St., San Francisco.

PAINTING, DECORATING, ETC.
- A. R. Kissel, 1747 Sacramento St., San Francisco.
- D. Zelinsky & Sons, San Francisco and Los Angeles.
- The Tormey Co., 681 Geary St., San Francisco.
- A. Quandt & Son, 374 Guerrero St., San Francisco.
- Artistic Painting Company, 39 Tehama St., San Francisco.

SILENT CALL Chicago HOSPITAL SIGNAL SYSTEMS
GARNETT YOUNG AND COMPANY
Pacific Coast Sales Engineers
612 Howard St., San Francisco
Seattle Los Angeles Portland

Von Duprin

Self-Releasing Fire Exit Latches


Specify—
Von Duprin
Self - Releasing Fire Exit Latches, as approved by the Underwriters' Laboratories (Inc.) of the National Board of Fire Underwriters.
Report No. S. A. 163; Guide No. 100-F 24.

A New Reference Book

The Von Duprin *Reference Book* for Architects will be ready for mailing about the time this advertisement reaches you.

The Reference Book is the first complete digest of information on panic devices to be published. It shows by text and illustration just which type of Von Duprin to use on any door. It illustrates all Von Duprin models, and with each one it shows the door hardware and trim to be used with the device. Diagrams give the technical information necessary for specifying panic devices for any type of door, and charts for reinforcing hollow metal doors, giving also proper lock locations for hollow metal construction.

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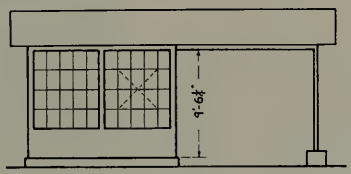

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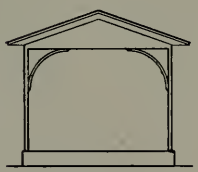

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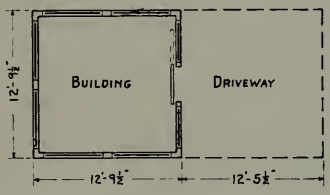

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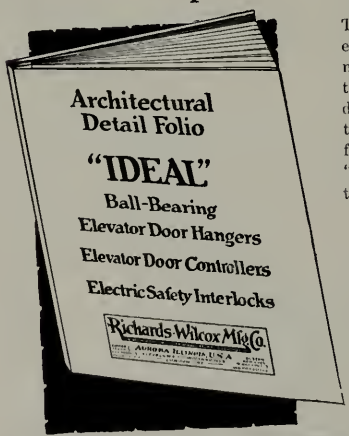

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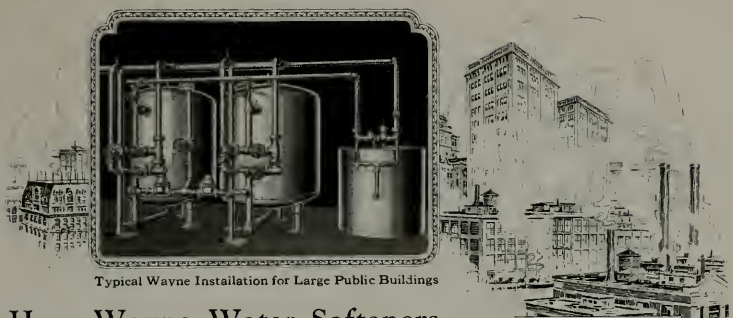

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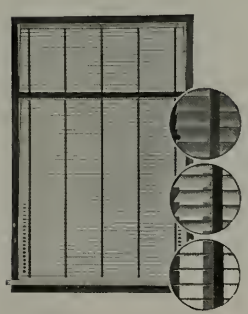

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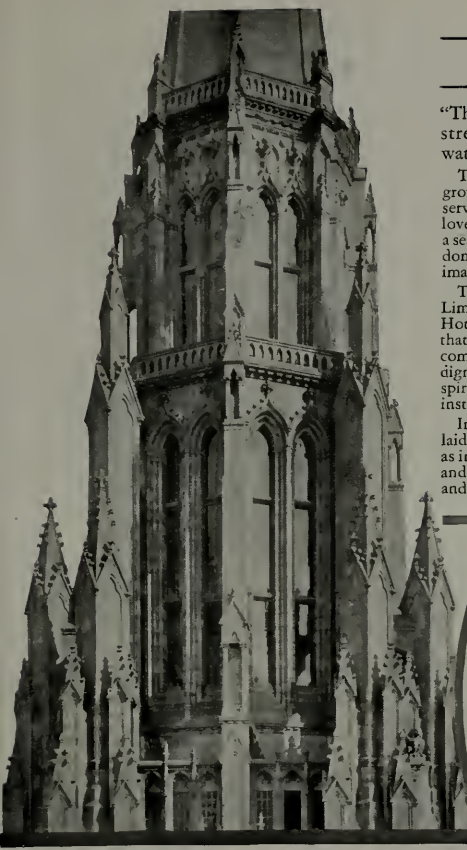

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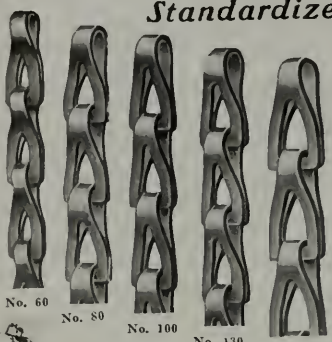

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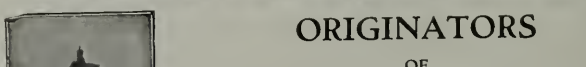

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GEORGE W. KELHAM, ARCHITECT

THE
ARCHITECT
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MARCH
1924

VOL. LXXVI
No. 3

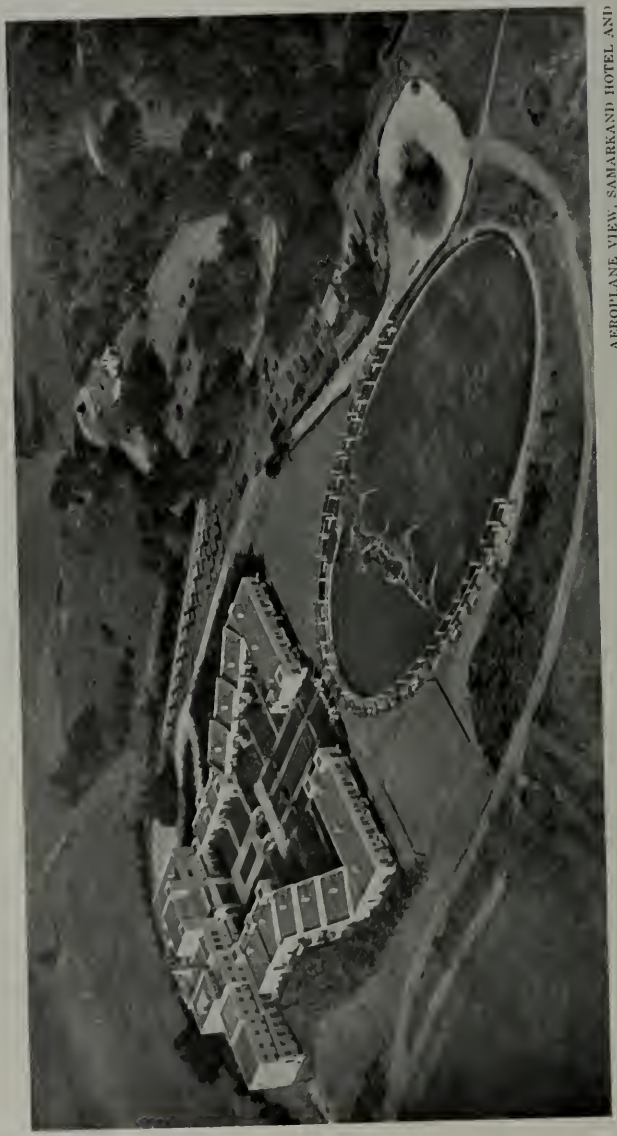
The Samarkand Hotel at Santa Barbara

By FREDERICK JENNINGS

IT remained for an Eastern friend—a tourist who had traveled 3,000 miles—to tell me about the wonders of Samarkand which in Persia means "Land of Heart's Desire." Samarkand is a beautiful out door hotel nestled in the foothills of lovely Santa Barbara and overlooking the old Spanish town and ribbon of blue sea that skirts its border. And when this traveler from the East told of the wonders of Samarkand he once again vivified that old saying about one's ignorance of the wonders of his own country—for is it not true that many of us fail to appreciate the beauty spots under our very eyes until told of them by an inspired visitor? The Persian hotel at Santa Barbara is not necessarily Persian from an architectural point of view. To describe its type of architecture would be to class it as of Spanish and Moorish inspiration. The Linnard management, however, since taking over the property that originally was planned as a private school, has made many changes, and is still making them, which contribute an undeniable Persian atmosphere to the surroundings. An attractive entrance has been designed by Architects Marston, Van Pelt & Maybury of Pasadena and this is now under construction. Plans have been made by the same architects for an open air Persian swimming pool and for an additional wing to the "Honeymoon House" reached by a cloistered arch and insuring guests of even greater seclusion than they could find in their own home.

The main mass of buildings faces a great court in which are terraces, steps, fountains, lily pools, swan lake and hidden gardens, which latter, upon close inspection, reveal to the bewildered guest a profusion of blooming daffodils, iris, watsonia, hyacinths, tulips and other bulbs of springtime. The pure white cement finish of the hotel, with background of green rolling hills, is given the needed far Eastern atmosphere by the general use of colorful decorations, drapes and awnings. No surfaces or drapes are left neutral.

The hotel and gardens were planned by Messrs. George Austin Dennison and Charles Francis Ingerson, who are now in Europe for a



AEROPLANE VIEW, SAMARKAND HOTEL AND GROUNDS, SANTA BARBARA, CALIFORNIA

"HONEYMOON HOUSE," SAMARKAND HOTEL, SANTA BARBARA
Geo. A. Dennison and Chas. F. Ingerson, Designers

DETAIL OF CLOISTERS, SAMARKAND HOTEL, SANTA BARBARA
Geo. A. Dennison and Chas. F. Ingerson, Designers

GARDENS AND POOLS, SAMARKAND HOTEL, SANTA BARBARA
GEO. A. DENNISON AND CHAS. F. INGERSON, DESIGNERS

VIEW OF HOTEL FROM SWAN POOL, SAMARKAND HOTEL, SANTA BARBARA
GEO. A. DENNISON AND CHAS. F. INGERSON, DESIGNERS

GARDEN FRONT FROM CLOISTER, SAMARKAND HOTEL
GEO. A. DENNISON AND CHAS. F. INGERSON, DESIGNERS

BALL ROOM, SAMARKAND HOTEL, SANTA BARBARA
Geo. A. Dennison and Chas. F. Ingerson, Designers

LOUNGE ROOM, SAMARKAND HOTEL, SANTA BARBARA
Geo. A. Dennison and Chas. F. Ingerson, Designers

DINING ROOM, SAMARKAND HOTEL, SANTA BARBARA
Geo. A. Dennison and Chas. F. Ingerson, Designers

BED ROOM OF SUITE, SAMARKAND HOTEL, SANTA BARBARA
Geo. A. Dennison and Chas. F. Ingerson, Designers

MARBLE BUDDHA FROM INDIA, SAMARKAND HOTEL, SANTA BARBARA

period of travel and study. The manager of Samarkand is Mr. Wallace Vail, for five years associated with the Linnard interests in the management of the Fairmont and Whitcomb hotels in San Francisco.

The following paragraph from the pen of Mr. George Gilbs, novelist and artist of Philadelphia, sums up the beauties of the hotel and its environment:

"I shall never forget the moment of complete beatitude when I reached Samarkand's gardens and pools and looked down from the Tent of Omar over the City of Santa Barbara to the sea. It was the full of a lovely moon, sailing gently between mountains and ocean, as though this were its favorite course, as though there were no other place in the world worthy of its beneficence. It drenched the misty valley with radiance, and bathed the grey battlements of the hotel buildings with silver. From somewhere came the tinkle of water and out of the obscurity of the gardens below, pale flowers emerged and mingled their fragrances with those of mountains and sea. Warm lights from screened lanterns, lent to the exotic illusion, only disturbed by the distant roar of a train to remind one that he was visiting not the palace of a Shah or Sultan, but a hotel in a very vital American city."

* * * *

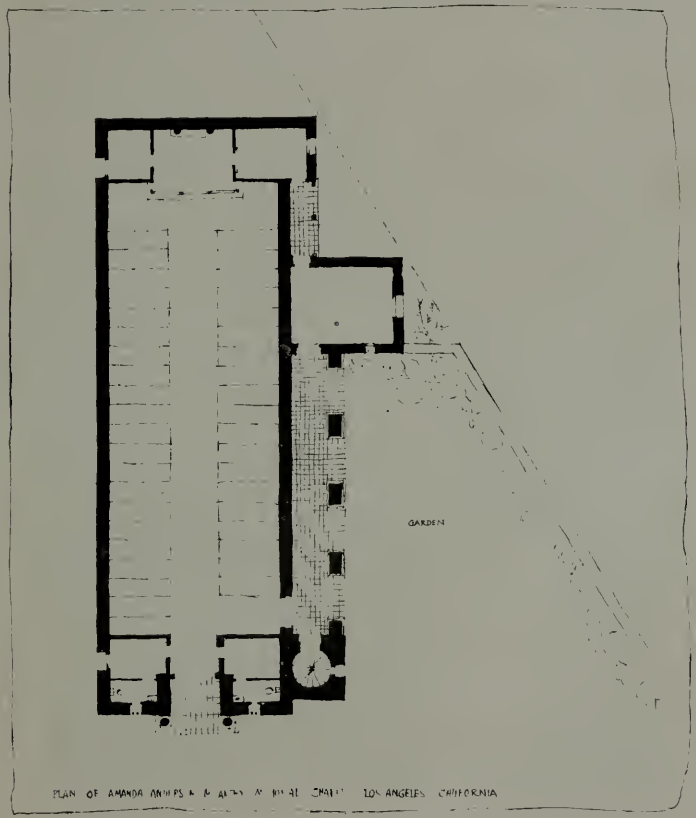
Hawaiian Tools Similar to Egyptians'

Stone adzes used by Egyptians nearly 5,000 years ago to hew out tombs in soft limestone are almost identical in form with the stone adzes used by Hawaiians to within recent years to cut wood. Dr. Henry S. Washington, of the Carnegie Institute, who points out this similarity, says that it may support the theory that the culture which existed on the Pacific islands and in America before the time of Columbus originated in ancient Egypt about 800 B. C., and was spread westward by sailors. However, he thinks it more probable that the Hawaiians and Egyptians worked out the problem in much the same way but independently.

AMANDA A. MC CARTHY MEMORIAL CHAPEL, CARTHAY CENTER, LOS ANGELES
ALFRED EICHLER, ARCHITECT H. W. BISHOP, SUPERVISING ARCHITECT

A Spanish Colonial Chapel

MR. ALFRED EICHLER, architect of the interesting chapel at Los Angeles here illustrated, writes that this edifice was built by the Carthay Center Syndicate as a memorial to Amanda Anderson McCarthy, a pioneer woman of Southern California. The architecture is a free handling of Spanish-Colonial motives. Built of hollow concrete the exterior has been given a finish of smooth white stucco with roof of hand made tile, the product of Mexican labor in Santa Monica. The tile was burned longer than usual for the purpose



PLAN OF AMANDA ANDERSON MEMORIAL CHAPEL LOS ANGELES CALIFORNIA

of securing a combination of colors characteristic of the old Spanish roof tiles made by the padres. No photographs of the interior of the chapel are shown, since it has been purposely left in a more or less incompleted state until such a time when funds will permit the carrying out of the architect's plans for decorations crudely fashioned by primitive Indian labor.

AMANDA A. MC CARTHY MEMORIAL CHAPEL, CARTHAY CENTER, LOS ANGELES
ALFRED EICHLER, ARCHITECT H. W. BISHOP, SUPERVISING ARCHITECT

AMANDA A. MC CARTHY MEMORIAL CHAPEL, CARTHAY CENTER, LOS ANGELES
ALFRED EICHLER, ARCHITECT H. W. BISHOP, SUPERVISING ARCHITECT

STEINHART AQUARIUM, GOLDEN GATE PARK, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT

The Steinhart Aquarium, San Francisco

By IRVING F. MORROW

MR. HOBART'S is an exuberant, even somewhat whimsical temperament working with deliberation. What might be casually misconstrued as emotional conservatism is perhaps more properly to be set down as intellectual caution. From his buoyant manner of discussing the fun of studying you know that his work is entered into with a gusto and a spirit of adventure. But he shuns irresponsibility. Caution is a worthy virtue. Yet, in the case of a whimsically inclined temper, one sometimes speculates on just what might happen if it were temporarily suspended. I am sure there are times when Mr. Hobart has an impulse to kick over the traces; and on such occasions I wish he might momentarily forget that his friends are eminently respectable. But despite this vein, his architecture is pre-eminently an intellectual one. It contains no accidents, either happy or unfortunate, because he knows both what he wants and how to get it. He is probably never surprised at his executed work; (and, if all architects were rigorously truthful, it might be a shock to know how frequently this statement could not be made). Divergence in philosophy or taste may lead you to disagree with what he has done, but you can never charge him with ignorance or neglect.

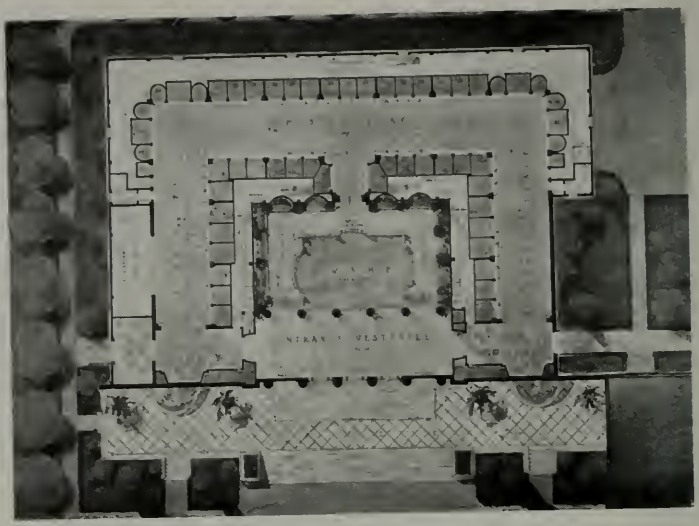
The Steinhart Aquarium of the Academy of Sciences group in Golden Gate Park, San Francisco, illustrates his attitude and manner of working. In planning and composition it is respectable enough for any school "projet" not sponsored by a "riche amateur"; but it is worked out with an irreverent playfulness of spirit which must be disheartening to the serious academic mind. Such a person should approach no nearer than the road, for from that distance there is an illusion of complete propriety; while a closer inspection will arouse his suspicion that Mr. Hobart has been trying to dodge royalties to the Vignola estate on mere technicalities. The interior is conceived in a spirit more frankly baroque. Yet if the fish which swim about with unsophisticated enjoyment could have a voice, I am sure they would prefer Mr. Hobart's marine whimsicalities and polychrome to the correctness of the "best examples." So, in fact, do I. The building impresses me—particularly the interior—as wholly delightful in character. The scale and proportions of the colonnaded entrance lobby are fine. The sureness with which the large simplicity of this central portion is maintained over a wealth of miscellaneous local "business' is extremely able. All the parts radiate the gusto which went into their working out. The color is not only appropriate and suggestive, but beautiful on its own account. The lively intrusions of polychrome tile into the prevailing sea-green ground tone are most happy in effect. The building conveys an idea.

It offers food for serious thought that a first class city can allow three structures such as the Park Music Stand, the Academy of Sciences buildings, and the DeYoung Memorial Museum, to grow up into a closely associated group without a controlling authority to impose some intelligent layout. The relation need not have been a formal one, but it should at least have been recognizable.

It is also a serious reflection on our public sense of fitness that the Francis Scott Key monument should be tolerated hanging about Mr. Hobart's fore-court like a vagrant. It is an association which can be profitable to nobody concerned. The monument casts scandalized aspersions at Mr. Hobart's architecture, while this in turn disrespectfully sniggers at the former's self-righteous cast-iron mid-Victorianism.

STEINHART AQUARIUM, GOLDEN GATE PARK, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT

ENTRANCE VESTIBULE, STEINHART AQUARIUM, GOLDEN GATE PARK
LEWIS P. HOBART. ARCHITECT



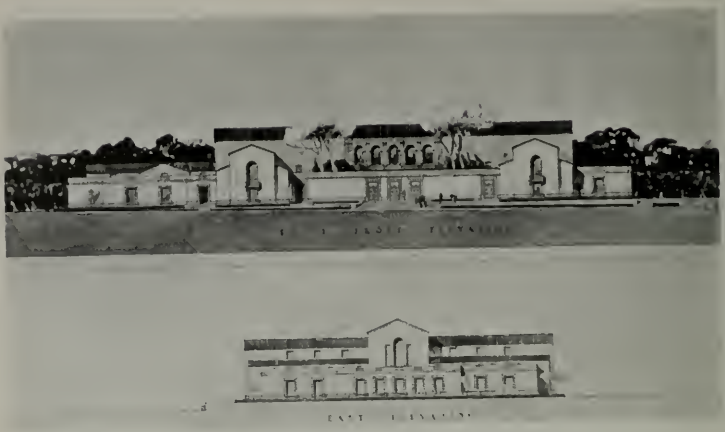
PLAN, STEINHART AQUARIUM, GOLDEN GATE PARK
Lewis P. Hobart, Architect

MAIN EXHIBITION CORRIDOR, STEINHART AQUARIUM
Lewis P. Hobart, Architect

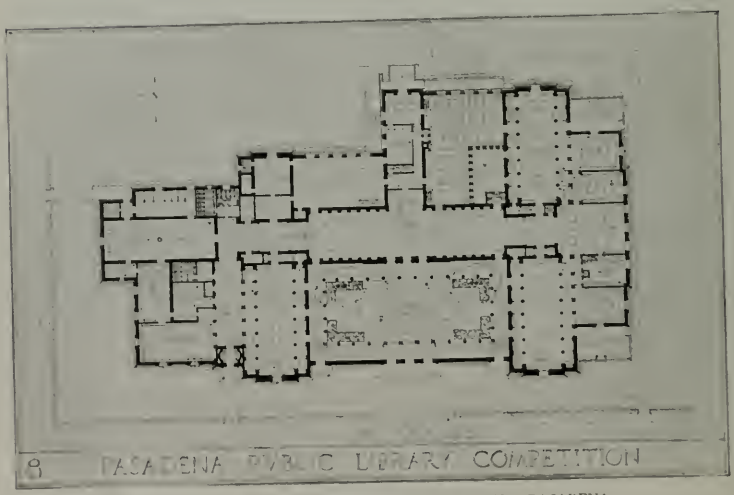
STEINHART AQUARIUM, GOLDEN GATE PARK, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT

STEINHART AQUARIUM, GOLDEN GATE PARK, SAN FRANCISCO
LEWIS P. HOBART,
ARCHITECT

SWAMP, STEINHART AQUARIUM, GOLDEN GATE PARK, SAN FRANCISCO
LEWIS P. HOBART, ARCHITECT



ELEVATION, PUBLIC LIBRARY BUILDING, PASADENA
Myron Hunt, Architect



FIRST FLOOR PLAN, PUBLIC LIBRARY BUILDING, PASADENA
Myron Hunt, Architect

Result of Competition for Pasadena Civic Center Buildings

THE architectural competition conducted by the city of Pasadena for the best designs for a city hall, library and auditorium is now a matter of history and from all accounts was a success. The program was approved by the Southern California Chapter of the American Institute of Architects and the competitors participated by special invitation. There were nine entrants of whom three were from San Francisco—Messrs. Bakewell and Brown, architects of the San Francisco city hall, Messrs. Bliss and Faville, winners of the competition for the recently completed State building in the San Francisco Civic Center and Willis Polk & Company.

Mr. William E. Parsons acted as consulting and advisory architectural expert. The jury was composed of Mr. Stuart French, chairman of the City Planning Commission of Pasadena, Dr. George Ellery Hale, Mr. E. A. Batchelder, Architects Robert D. Farquhar and Pierpont Davis of Los Angeles. The jury found the best plan for the city hall to be that submitted by Messrs. Bakewell and Brown of San Francisco; the design of Mr. Myron Hunt of Los Angeles for the library was accepted as superior to the others submitted while the design approved by the jury for the auditorium was that offered by Mr. Edwin Bergstrom of Los Angeles and Messrs. Bennett and Haskell of Pasadena, associated.

The report of the jury follows:

To the Board of Directors
of the City of Pasadena:
Gentlemen:—

In the study and analysis of the designs submitted, the three major considerations are as follows:

First—The general arrangement and composition of the various units of each plan with regard to the practical functioning and operation.

Second—The adaptation of each building to its site, particularly with reference to the mass of the facades terminating the street vistas.

Third—Architectural character and expression with special reference to the climate and environment.

THE AUDITORIUM

Design Number 24 has been given first place for its general superiority in plan and front elevation.

The seating arrangement is particularly excellent. Accessibility is well cared for and exits are well arranged and located. The majority of the seats being placed on the first floor permits a relatively small balcony and gives greater amplitude to the hall. All balcony seats face directly toward the stage. The size and proportion of the main auditorium and the simplicity with which the side walls and ceiling are treated, give promise of a beautiful room.

Provision for additions in the form of exhibition halls, etc., are handled in an adequate manner, making it possible to combine the exhibition hall with the auditorium so that they may function together on special occasions.

The exterior of the building is especially attractive. Simple and dignified in character, the face of the building will form an effective termination of the street vista. Recognition of its northern exposure and its use of color about the second story windows is well conceived. The arrangement of the entrance steps and terraces is commended.

THE LIBRARY

Design Number 8 has been adjudged the best.

This building is unique in plan and elevation. The entrance into the forecourt creates at once an atmosphere of seclusion from the public street.

The interior offers interesting possibilities for surroundings, inviting quiet and study, peculiarly appropriate to a library.

The independent entrance from the street to the auditorium and the children's rooms and the central functioning of the various parts of the plan are well studied, particularly the relation of the circulation room, stock room and reference rooms.

ELEVATION, CIVIC AUDITORIUM, PASADENA
Edwin Bergstrom and Bennett & Haskell, Associated Architects

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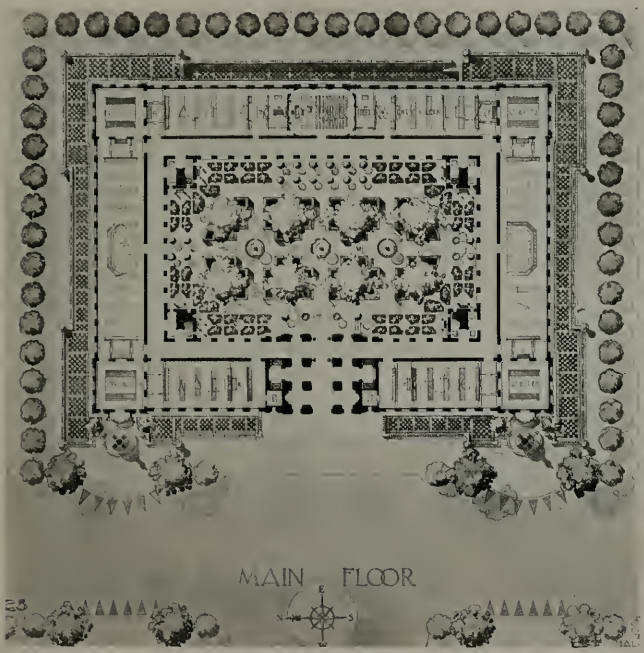
PLAN, CIVIC AUDITORIUM, PASADENA
Edwin Bergstrom and Bennett & Haskell, Associated Architects

ELEVATION, CITY HALL, PASADENA
Bakewell & Brown, Architects



MAIN FLOOR PLAN, CITY HALL, PASADENA
Bakewell & Brown, Architects

The division of the reference room into subordinate alcoves is commendable. Since all of the departments except the rooms for the staff are on the main floor, the building will serve well the need of practical and economical operation.

The exterior presents unusual interest from all the various points of approach to the building, is appropriate for a southern exposure and offers a charming terminal for the street which it faces.

THE CITY HALL

Design Number 25 has been awarded first place.

The plan of the City Hall takes advantage of the rectangular site to give a large cloistered court which forms the garden vestibule of the building.

The masses of the building form a continuous uniform width surrounding the court; this uniform width permits a flexible disposition of partitions for the various sizes of rooms necessary for the different departments of the city government. In fact, in this respect the floor plans afford all the practical advantages of a modern office building, following one of the best known types where the building is erected around the four sides of a central court. Constructed along the simple straightforward lines of the plan, this building should be economical as regard construction costs.

The arcades and the circulation through the garden give a perfect system of circulation and access to all departments, while the small stair towers in the four corners of the court complete this system and lend additional interest.

The author of this design presents suggestions for immediate construction and future extension of the building, including the belfry, which forms the central motif on the axis of Holly street. Further study will give opportunity to perfect the design. Generally, the mass of the facade and its simple lines will make the City Hall the dominating center of the group of civic buildings.

The jury wishes to express its opinion that the competition is well justified by the generally high standard of the designs submitted and by the excellence of those selected as the best. Judging by the quality of the designs selected, the jury believes that their authors will prove to be the type of men who will lend the fullest cooperation with the City Directors, the Planning Commission and its architectural consultants in producing a unified and entirely satisfactory group of civic buildings.

The judgments of the jury were unanimous.

* * * *

Architect and Engineer Annual House Number

Of exceptional interest will be the annual House Number of The Architect and Engineer, out April 20th. The number is published two months earlier this year as many owners who contemplate building have expressed a desire to inform themselves on the new work that has been done by architects before deciding upon their own plans. The spring building will start in earnest in another month so that the issue, coming out at this time, should be a valuable aid to those seeking up-to-the-minute ideas.

This year's House Number will show homes recently completed in every section of California, including San Diego, Los Angeles, Santa Barbara, Pebble Beach, Monterey, San Jose, San Francisco, Oakland, Berkeley and Sacramento. Work will be shown of architects who have acquired reputations as designers in domestic architecture. Both large and small houses will be presented and plans will be given wherever possible. More than fifty full page plates will make this issue one that no architect can afford to be without, while the layman will find the issue a big help to him in his search for something worth while in home design.

* * * *

New Building for Oakland Elks

Completed plans for a new building for the Oakland lodge of Elks to be erected at Broadway and Twentieth street have been approved. William C. Knowles is the architect and the plans call for a building of Gothic architecture. A part of the structure will be eight stories high and the remainder, which will provide living rooms for the members, will be 180 feet high. The estimated cost is $1,000,000.

SAN FRANCISCO
PUBLIC LIBRARY

Publicity for Architects—Good and Bad

THE Publications and Public Information Committee of the American Institute of Architects has secured the publication of certain articles in the daily press as publicity matter intended to advance the standing of the profession of architecture and indirectly its practitioners. Among these articles are "The School House Beautiful;" "Snappy Styles in House Building;" "A Little Sermon on the Triangle with Particular Emphasis on the Architectural;" and "Just a Love Nest." To the credit of the profession, it can be said that most of these articles are written by non-architects.

What reaction is produced by these titles and the text of the articles? How can they promote a decent regard for the profession? While they will not appeal to all of us alike, it is the effect on the great majority that concerns us.

"The School House Beautiful"—why the "Beautiful"? Does not that designation add a ladies boudoir tone to one of the most important buildings in any community? A school house should be beautiful—it is very desirable but why not rather call it useful? To serve its purpose it must be planned for use and so designed it becomes, when properly managed, a most potent influence in any community. Its function is useful constructiveness in everything for the betterment of society.

"Snappy Styles in House Building"—how impressive this is! We look for advertisements of snappy styles in garments for flappers of both sexes. Happily these snappy styles soon disappear. A house should be a permanent construction and in a style worthy of a house. Homes are stressed enough by the present transitory condition of society without further assaulting them by snappy styles. We can at least treat the house and home decently.

"A Little Sermon on the Triangle," etc., is not a title that would cause anyone seeeking architectural information to make any great effort to procure it. It is an enigmatic title suggestive of an attempt at flippant comedy.

"Just a Love Nest" does not suggest to any sane person an association with architecture or architects. Every profession has its sentimental corollary. It is right and proper that such sentiments should have their expression and when repressed or omitted the result is a mechanical and lifeless production. The sentiments that actuate a good architecture are truth, simplicity and dignity. Without these it will perish as do the snappy styles of garment—unworthy of a long existence. After reading this article and believing it, no prospective house owner would have the stomach to rush out madly to secure the services of an architect. Rather would he hunt for a decent carpenter and mason to build him a dwelling.

Fortunately, "Just a Love Nest" was not written by an architect but unfortunately it and the others mentioned were fathered by the national architectural organization. It is difficult to understand how architects can defend successively such publicity matter (let alone permit its publication in their official San Francisco organ). The profession embraces in a vast majority of its members, men of serious purpose who can hardly be expected to enjoy the exploitation of their best efforts in a joke book style.

Publicity is far reaching in its effects. Good results are of slow growth and bad results are quickly achieved due to that very human willingness to depreciate rather than appreciate. It is a serious thing

to engender a false impression about any important thing. The best publicity is that produced by those who have a broad and intimate knowledge of the thing to be exploited. Architecture can best be promoted by architects, it cannot be done properly by comedians or humorists in a low-comedy, jazz style. If architects as a body are satisfied with such a publicity campaign nothing will be done to correct the situation. In the meantime this work proceeds with an output of weekly installments. It is inconceivable that the great body of professional architects will give a ready support to the campaign. At least it so appears to one who signs himself "on the Sideline" in the February Bulletin of the Illinois Society of Architects.

* * * *

A Questionnaire for Architects

ARCHITECTS who are members of the American Institute of Architects, have recently been supplied with a questionnaire for the purpose of obtaining their views on certain subjects of vital interest to the profession and from the answers received the Committee on Architectural Relations hopes to formulate the reflection of the attitude of the majority of the members. The following are the questions, together with an answer to each, submitted by Mr. Chas. E. Fox, a member of the Illinois Society of Architects and Institute Chapter in Chicago. Practically every member of the Institute in Chicago has requested an opportunity of signing Mr. Fox's reply, so faithfully do the questions voice their individual sentiments.

The questions and answers follow:

Question—What should be the attitude of architects to speculative building and speculative builders?

Answer—My attitude would vary with the character of the speculator and the nature of his business. To the man who puts his real money into the creation of a rent roll for the purpose of producing an attractive article for sale to investment capital, I would bring the same attitude that I do to any other client. I would decline to serve a man who is minded to create a building out of credits, bond issues, stock payments on account of work and padded or fictitious rent rolls for the purpose of unloading on a credulous buyer.

Question—What should be the attitude of architects to so-called group practice, or as it has been called, "hunting in packs"?

Answer—I must plead ignorance on this system. In thirty years experience I have not knowingly encountered this item of professional activity.

Question—Is it right for architects to do business on the reputation of the dead or retired, especially when they lack the inspiration and touch of the vanished hand, and need restraint, as by the voice that is stilled; and what should be the attitude of architects to this business method?

Answer—I believe that no business can live under whatever name it is called unless its performance measures up somewhere near its promise. I would say that doing business under a name which on its face calls for a character of work which cannot be delivered, would be more likely to destroy than to build up. If the business thrives under this arrangement, it would seem that the work which built the reputation had been done by those who remained rather than the dead hand that received the credit.

Question—Should architects practice on a strictly professional basis, or should they be unprofessional and yield to the embraces of the commercial elements of the building business?

Answer—The business of architecture in its artistic sense is a part of a larger and broader business which is largely commercial. If the

American Institute of Architects chooses to confine its activities to the artistic portion of the building business, well and good; membership in it will be quite as interesting and perhaps more interesting than if it attempts the entire scope of the work; but in that event, in my opinion, it must not expect to dominate, direct and control the business. It is my opinion that the architectural profession will either expand its activities to take in more of the commercial elements of creating buildings, or the organizations now controlling the commercial elements of the business will expand to take in a large part of the activities now conducted under the designation of architecture. I prefer that architects expand.

Question—Should the Institute base its membership requirements on notable achievement and so become a select society; or should it make character and reasonable competence its standards and become an organization having a majority voice in the profession, and truly representative of it?

Answer—I would like to see the American Institute of Architects become an organization of a majority of the good men in the profession and properly representative of it, provided it possesses a sufficiently aggressive and intelligent personnel to do so one hundred per cent.

I would rather see the Institute contract its activities and limit them to the artistic elements of the profession than to see it attempt to take the driver's seat and make a failure.

Question—What should be the attitude of the Institute toward smaller and more local architectural and related and allied organizations?

Answer—I think when the Institute assumes any attitude towards the smaller and more local organizations than that of sympathy, and helpful co-operation, it will automatically cease to be anything worth while.

* * * *

The Business of Architecture

FINE buildings have a mission aside and apart from their architectural beauty. Also commercial buildings should conform to their surroundings in matters of architecture and selection of materials entering into their construction. When a municipality demonstrates civic pride and its citizens generously set aside funds for the erection of a library, a school, or a memorial, it is but natural to suppose that public opinion would be opposed to the erection of an unsightly warehouse or some other structure of a similar nature immediately alongside. In the case of municipally built and owned buildings the design does not necessarily have to take into account the saving of space or the financial returns from tenants and so the architect is free to work out his ideas without regard to commercialism. America stands accused of being a commercial nation and the charge undoubtedly requires no proof even in the minds of its own citizens; and as a consequence it is but reasonable to suppose that its professions are tainted with the business of finance. Even the practice of architecture needs must combine with art, so much so at times as to cause us to ask whether architecture is art or business.

We in America who have studied economics in relation to construction and in conjunction with art see in the architectural profession the mere working out of a system made necessary by the requirements placed upon architects by builders, owners of real estate and leasees of buildings. In our cities building sites that are measured in inches must be utilized in terms of financial return with the value of the site as the initial figure. To this the architect must add cost

of construction and so apportion the interior as to assure the financial results estimated by the builder as necessary to make the investment a profitable one. Every new building raises a public question, according to the American Institute of Architects' committee on public information, and, it adds, "in all structures beauty and utility should be present." The commmittee also declares that as all buildings are seen society has a right to demand that none be ugly, that none be unsafe and that none be dangerous to health. But it is the definition of an architect to which we wish to call attention as emphasizing the point that the American Institute of Architects recognizes business training as a requirement for the successful architect. The definition follows: "An architect should have a fundamental knowledge of art as an expression of beauty, of structural requirements and of practical design and planning. The practice of architecture requires business executive ability of a high order." Further recognition of business in architecture is seen in the establishment of studentships for the study of the earning capacity of fine buildings by Mr. Alfred Bossom. By instituting these studentships, Mr. Bossom makes it possible for one English student to travel and study in the United States for a year and obtain at first hand information, which the donor himself, an Englishman, must have felt did not exist in his native country. These studentships will be awarded in a competition, and it is interesting to note that the conditions require the students to name the city or town, position of site and submit a scheme as architect to a hypothetical building company. It will be necessary to state the annual value of the site, purposes for which the site is best suited and height and other details to conform to the set rules. It might be argued that Mr. Bossom overlooks relative values of building sites as between New York and London, but investigation discloses that certain London streets have attained higher values and consequently higher buildings. Thus commercial architecture has gained a foothold in the United States and we predict that European countries will not be slow in acknowledging the merits of this branch of the profession and that great savings will result with no radical departures in design that would detract from architectural beauty.

In the rise of commercial architecture stone has met the changed conditions at every step, it has likewise maintained its supremacy in fields where other building materials have never been used and through the dictates of art cannot be used. With the advent of the steel-framed structure cut stone was found to be as adaptible to exterior use as manufactured materials and, from the extent of its use for the entire exterior of so-called skyscrapers it has merited the confidence of architects in specifying it for fine commercial buildings.

* * * *

Building Against Earthquakes

In rebuilding the cities which the earthquake destroyed, the Japanese will rely, as far as possible, on the American system of steel skeleton structures. One interesting feature of the Tokyo post-earthquake survey is the recommendation—which probably will be embodied in law—that foundations of buildings shall not be extended down to bedrock, hardpan, or other solid basis. They are to be "floated" on relative loose earth, so as to be free to move with the waves of the temblor. That practice, likewise, is not entirely new in Chicago experience, though for entirely different reasons.—Chicago Journal.

STORE BUILDING FOR LESLIE R. WILSON, BERKELEY
Designed by Hutchison and Mills

Improved Store Building Design

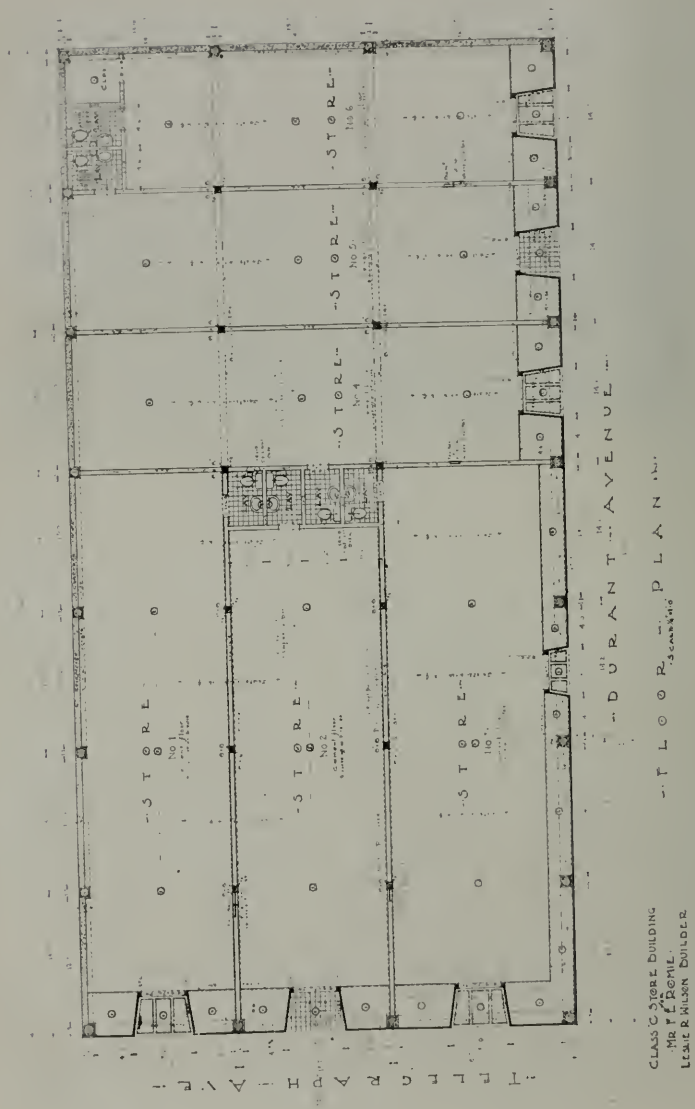
By R. L. MILLS

IT is gratifying to note that architects are putting more character into their designs of medium cost store buildings, particularly in the outlying districts of cities where stores are necessary to take care of community demands. Oakland and Berkeley have quite a few of this improved type, the accompanying pictures being selected as typical examples.

For obvious reasons the modern store building is built either of reinforced concrete or brick. While the initial cost of concrete or brick is considerably more than frame, the ultimate cost is invariably less. Frame store buildings can be built as low as $2.00 per square foot while the better types of reinforced concrete store buildings cost $4.00 per square foot or more. While there appears from these figures to be an apparent doubling of cost such is not the case. The concrete or brick building is built much higher from the street grade to the roof line, with higher ceilings and higher fire walls, and foundations capable of carrying additional floors when business conditions warrant. Furthermore, the entire building is finished better than a frame structure, both interior and exterior.

A Class C store building has been found to attract the better class of tenant and is leased more quickly and with considerable less effort than a frame structure. The rentals, too, are much higher, as might be expected.

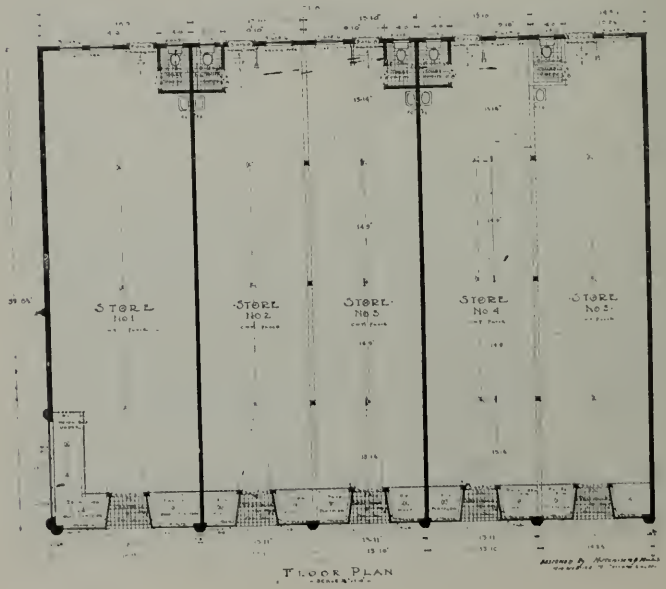
Insurance on a frame building is no negligible quantity, in fact the high premiums imposed by the insurance companies on buildings of flimsy construction are veritable profit eaters, the rates ranging from about $3.00 per $100 up, depending upon exposure, tenancy, etc. Insurance on concrete store buildings may be written as low as 50c


STORE No 1
STORE No 2
STORE No 3
STORE No 4
STORE No 5
STORE No 6
DURANT AVENUE
FLOOR PLAN
TELEGRAPH AVE
CLASS C STORE BUILDING
MR F E ROMIE
LESLIE R WILSON BUILDER

STORE BUILDING FOR F. E. ROMIE, BERKELEY
Designed by Hutchison and Mills

STORE BUILDING FOR LESLIE R. WILSON, BERKELEY
Designed by Hutchison and Mills

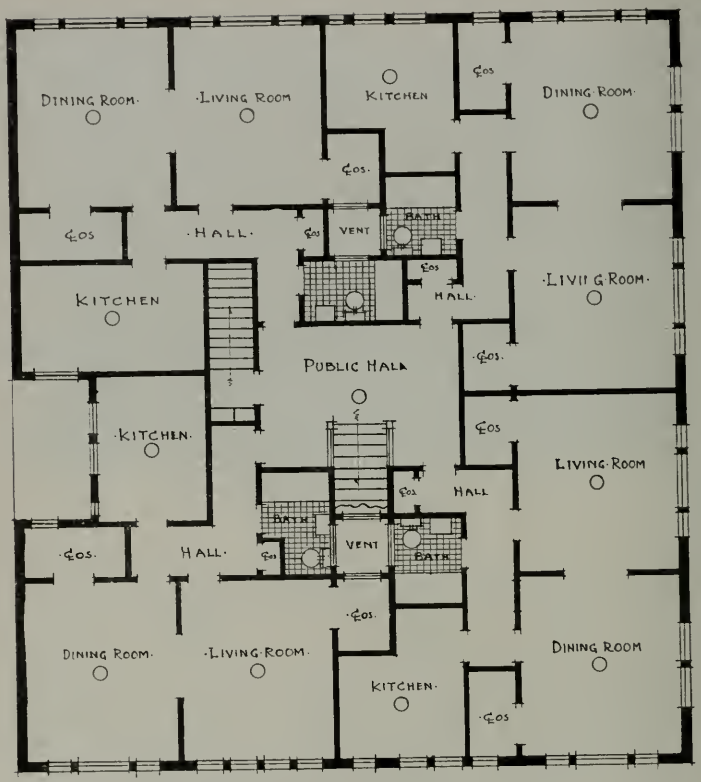
STORE BUILDING FOR LESLIE R. WILSON, OAKLAND
Designed by Hutchison and Mills



FLOOR PLAN

STORE BUILDING FOR LESLIE R. WILSON, BERKELEY
Designed by Hutchison and Mills

STORE BUILDING FOR LESLIE R. WILSON, BERKELEY
Designed by Hutchison and Mills



SECOND FLOOR PLAN

DESIGNED BY
HUTCHISON & MILLS
1214 WEBSTER ST OAKLAND

SECOND FLOOR PLAN, BUILDING FOR MURPHY HAMILTON, OAKLAND DESIGNED BY HUTCHISON AND MILLS

per $100. In the former case the premium very materially lessens the returns on the property, in the latter case the insurance outlay is negligible.

The rates for fire insurance also give a measure of the risk involved in frame buildings by having the income stopped entirely by fire, a loss which insurance does not take care of.

Depreciation and deterioration are other items which must be charged against a frame building but do not figure to any extent in concrete, brick and tile construction. The frame building begins to depreciate almost as soon as it is completed and the landlord must have a greater proportionate return on his capital to offset this loss.

STORES AND APARTMENTS FOR MURPHY HAMILTON, OAKLAND
Designed by Hutchison and Mills

After all, the final test is in the salability of the property, its appearance and type of construction having much to do with its resale value.

In considering the desirability of business property as an investment the following points should be kept in mind: while the net returns from stores may not be as high as with some types of property, they are more likely to be a safer investment. The landlord who leases a store to a tenant is giving that tenant an opportunity to make money as well, which is not always the case with certain other rentals. There is nothing much safer as an investment than a good piece of well located business property. In addition to the generous returns and splendid security there is always the increase in value which comes as a natural sequence to growth.

STORE BUILDING FOR LESLIE R. WILSON, OAKLAND
Designed by Hutchison and Mills

STORE BUILDING FOR LESLIE R. WILSON, BERKELEY
Designed by Hutchison and Mills

Houses or Traps?—Safety First*

By BAILEY WILLIS
Professor of Geology, Stanford University

THERE is little danger in an earthquake country if you live in a house, but he who lives in a trap had better look out. It makes no difference whether he knows that it is a trap or not. Ignorance is no excuse. It is everyman's business to know for the sake of his family and of the community. This extends to a man's place of business, for your wife or mine may be caught in the wreck of a store building, whose pretentious solid front is a screen for the weak frame behind it and a menace to those who will run out of the store when the earthquake comes.

Not only is ignorance no excuse; there is no excuse for ignorance. It is well established at the cost of hundreds of millions of dollars that we live in an earthquake country and that earthquakes will produce certain disastrous effects. Engineers and architects have studied those effects and have devised means of avoiding them. Their conclusions are published in easily accessible reports. Yet the most casual observation shows that they are not considered in designing dwellings, stores, even schools, the buildings in which the larger part of our people spend most of their existence.

An earthquake movement is a sudden and very rapid to and fro motion, a vibration, which first causes a building to resist by its inertia, so that it tends to remain stationary while the ground slides forward beneath it. The immediate effect is to set up a horizontal shear, which breaks the bond on horizontal courses of brick or stonework. If this be resisted by good construction, the next effect is due to the inertia of the superstructure and roof, which lag behind as the foundations move with the earth. If the structure be not strong enough to resist the inertia which it itself opposes to the sudden movement, it will crack, break, and possibly collapse. During the continued vibration, the building is given a swaying motion, like an inverted pendulum. In this motion every part of the structure assumes a period of swinging which is peculiar to its form and to the position of its center of gravity. A light frame, supporting a heavy roof, swings with a period different from that assumed by a chimney, which is heavy at the bottom. Swinging apart and then returning, they crash against each other and the weaker is wrecked.

It has been shown that well built frame residences or stores will resist these stresses about as well as steel frame or reinforced concrete, considering the weight and size of the structures. Block construction with horizontal joints, whether of brick, tile or cement, is utterly discredited. Buildings of composite character, brick firewalls and wooden floors and partitions or any similar combination in which the parts are not intimately tied together, are invitations to destruction.

There is nothing new about these statements. They are taken from the report of the committee of engineers appointed by the American Society of Civil Engineers to investigate the results of the San Francisco earthquake and fire. But they are not heeded.

It is not enough to put these things into engineering reports. They need to be burned into the public consciousness. Shall not the holocaust of Yokohama suffice?

This suggests the other aspect of the problem, fireproofing. There

*Notes from a talk before the San Francisco Chapter, A. I. A., and prepared by the author for this magazine.

is no one agency which is a greater incendiary than an earthquake, as San Francisco well knows. Yet it is not the great buildings of the city that we, Americans, need so much to consider as our dwellings. The former are built fireproof, except where lax regulations and greed produce cheap Jerry building. But the building of slow-burning dwellings has yet to become general through the combined efforts of architects, engineers, and insurance men. Let no one say it is impossible. It is being done at reasonable cost with promising results and it can be carried out to success if the public once understands that it is within reach.

It is a fundamental condition of success in any effort to promote the adoption of an idea that the new method shall conform to the habits of people and to their economic circumstances. For this reason the American builder is committed to the wood frame for light construction. His first problem is to secure that frame against wrenching or breaking by earthquake, and the second is to protect it from fire. Both of these things can be done, because they have been done. A wood frame can be so wired by lacing galvanized fence wire diagonally across it in both directions at intervals of four to six inches that it will resist earthquake; and it can be so enclosed by metal lathe and plaster that heat and air shall be excluded for a reasonable time. I have seen a wired frame house in Chile which went through a very severe earthquake without a crack, and the walls of metal lathe and plaster which were left standing in the path of the Berkeley fire after the wood furrings and joists were burnt out are a sufficient testimony to the fire-resistant quality of that kind of construction. Where the wood frames were not exposed by the burning of the shingle roofs the walls stood unhurt, even through that conflagration.

We are also committed by custom to the shingle roof, but there is no reason why shingles of wood should be permitted. The failure of the proposal to prohibit the use of wooden shingles in Berkeley, in spite of the fact that they were a principal cause of the conflagration, is a glaring example of the weakness of public opinion when opposed by self interest with a profitable business behind it. There are excellent substitutes available for wood shingles, and the use of the latter in closely built districts should be made uneconomical through high rates of insurance.

The great advantage of a good frame building, whether of wood or steel, is that in an earthquake it acts as a unit, provided that it is thoroughly tied together in all its parts and will sway as a whole. Any structure not so tied separates into mutually destructive sections. A reinforced concrete structure can be so put together as to achieve the same result, but it is rarely done. The kind of construction which is still so common in our cities, is absolutely condemned by earthquake experience. The walls sway apart, dropping the floor beams, and the occupants are crushed in the collapse.

One could go on multiplying examples of defective design and suggesting improvements which are entirely within the range of reasonable cost, but it would be of no avail unless the men who originate the plans of buildings stand for earthquake-proof structures. There is no engineer, no architect, who can afford to plead ignorance. It is my personal opinion that none can afford to remain indifferent. I hold that we, professional men, are bound to warn our clients against the dangers inherent in practices which are all too prevalent, and that we should

do all in our power to develop public understanding of the fact that we can build safely. Let the architect's motto be "SAFETY FIRST," and let him put it over the firm name on every working drawing that he sends to his client.

* * * *

The Home of Washington

THE Mt. Vernon estate was one of several owned by Augustine Washington, the father of George Washington, says the Research Department of the National Lumber Manufacturers Association. It was orginally known as the Hunting Creek Estate. Lawrence, half-brother of George, succeeded to the title on the father's death. He named it Mt. Vernon, after the British admiral under whom he served in a West Indies campaign. Lawrence, in 1743-4, built the original house, between the two chimneys, part of which still stands.

On Lawrence's death the property passed to George, who took possession in 1752, and began remodeling the house in May 1758. This task was completed in September 1759. When it was done a single story or a story-and-a-half house had been made two stories-and-a-half. It measured 50 by 32 feet and contained twelve rooms. In 1773 Washington began the work of adding the two wings—one for a library and the other for a banquet hall. Each wing is 22 by 32 feet. At the same time certain alterations were made in the central portion of the house. The work dragged, on account of the Revolutionary war, but both wings were completed by 1778, and before Washington returned from the war the front portico and the colonnades connecting the house with the outbuildings in the rear, were completed.

The timbers of the framework of the mansion are of white oak, rough-hewn, and cut from trees on the plantation. Part of those in the main section of the house date from 1743, the others from the remodelings and extensions. Their ends are mortised and fastened together with wooden dowels. Much of the original flooring remains, for example that of the banquet hall, which is now about 150 years old. The siding was probably sawed from local pine at a near-by water-power mill, which was also a flour-mill, as was the custom of those simple days. The capacity of the cabinet-saws then used was so small that it took several days to produce enough siding for one house. One big sawmill today will make enough lumber in a day for twenty Mt. Vernons, from timbers to ceilings, floors, siding, etc. The lath was handsplit from red oak. Both lath and siding are in excellent condition.

The shingles are of cypress, and they have been renewed twice since Washington's death, first in 1860 and again in 1913. The present ones were obtained from North Carolina, just as the original ones were, and were split by hand, in the same manner as those of 1745, and to the same size as the originals.

Judging from some of the old wooden buildings of Europe, it is possible that the present timbers, at least, of Mt. Vernon will be intact as late as A. D. 2,750. So far Mt. Vernon is resisting the encroachments of time better than the Carlisle House, of about the same age, at nearby Alexandria. This house is of sandstone, and it has been necessary to give it a protective face of cement. The climate of America—favorable to wood—is much harder on building stone than that of Europe. The hieroglyphics on the granite obelisk in Central Park, New York, have been almost obliterated in less than half a century, though they were clear after 3,000 years in the Egyptian climate.

The New Architecture

By HENRY S. CHURCHILL in The Nation

THE New Architecture is with us, inexorably forced upon us, whether we will or not, by economic law. The relentless drive of economic necessity, the governing law of modern, even if not, as some maintain, of all life has created and is creating the architecture of today in actual structural fact. Aesthetically, where that law has been accepted and expressed, we have a living art; where it has been denied and disguised, we have a dying art.

Architecture has always been a reflection of the age that produced it. The hope of Egypt, the clarity of Greece, the pomp of Rome, the faith of the Middle Ages, the license of the eighteenth century, the acquisitiveness of the twentieth are faithfully mirrored in the temples of the times, whether these temples be of Ammon or of Mammon. Nor is there any doubt that as the material side of life has developed more swiftly in the last hundred years than in all the preceding historic centuries, so the structural side of architecture, which corresponds to the material side of life, has undergone greater changes in the last generation than in any preceding period of its history.

A hundred years ago New York was a charming, if muddy, city of red-brick houses with white doorways and cast-iron balconies, spired churches, and low warehouses and wharves, situated on a rocky island. Farm-houses dotted the open spaces between the villages of Yorktown and Harlem, Manhattanville and Bloomingdale. The fateful shadow of the gridiron had not yet fallen across it. As population, wealth, and ostentation increased, there came brown-stone fronts in endless rows, and more and more massive office buildings. In 1880 the first elevated railroad trailed its blighting way out to Harlem, elongating the city, choking its cross-town expansion, relegating the river fronts, the city's natural outlets to air and beauty, to commerce and squalor. Land in the Battery section became immensely valuable. Investors and owners, endeavoring to squeeze every drop of increment from their land, found that by building higher they could get greater returns. The height limit, however, would have remained that of convenient walking had it not been for the invention of the elevator. With its advent vertical transportation became a reality and the skyscraper a possibility.*

But limitations to the first high elevator buildings were soon discovered. It was found that the increase in thickness of the bearing walls necessary to carry great height ate up rentable floor space too rapidly to make a very great number of stories profitable, and besides cut off too much light. To take the place of these clumsy walls, cast-iron columns came into use, and various systems of long-span fire-proof floor construction. These were gradually developed to relieve the walls of practically all weight but their own. As the steel industry developed, steel columns came into use on account of their greater strength. The steel shapes were slowly standardized for lightness, convenience of design, and most of all swiftness of erection. It was found that by riveting an angle to the wall-beams it was possible to erect masonry from floor to floor independently of a masonry base, or to start it on many floors at once. The self-supporting wall thus went out of existence, as the floorbearing wall had gone before, and the true skeleton frame came into being. Walls became simple fillers between floors, without any

*The first real skyscraper was erected in Chicago, but under analogous conditions. There high property values were artificially created by the elevated "loop," which still effectively strangles the city.

structural value whatever. This permitted reducing them to the least thickness compatible with their staying in place and keeping the weather out, and not only saved space, but weight and, consequently, steel.

Another change, the most recent and obvious, in the architecture of New York, has been brought about by the zoning and set-back laws. Economic dictates, of course, were behind the enactment of these laws. When the greed of property owners and speculators in exploiting the space above their lots threatened not only to become a menace to public health but to reduce rentals by cutting off light and air, it was found desirable to limit an owner's rights to do what he pleased with his own. The Rights of Private Property were invaded ostensibly for the protection of the public—and one of the most beautiful and characteristic effects of New York architecture has been the result.

With the practical modern office-building essentially a steel frame requiring, logically, an entirely new exterior expression, a fair question is: Why are our streets lined with specters of the outworn past? In a measure it is because aesthetic development must always lag behind structural changes which demand such rapid visual readjustments as are involved in the change from wall-bearing to skeleton steel construction.

A generation is a short time for the eye to get accustomed to new dynamic relationships. One of the most important of these relationships is the immensely greater strength of steel as compared to the materials formerly in use. The experience of ages had taught that so much masonry was needed to support so much weight; that a stone could reasonably span such a distance, a wood beam such another distance; that too slender a support would buckle and break, too long a lintel sag and crack. Steel and reinforced concrete have changed all those long-accustomed balances. The eye must come to new realizations of what is safe, and therefore what is comfortable, and therefore what can give pleasure.

Other changes are the elimination of shadow brought about by shallow reveals in the thin curtain-walls, and the consequent emphasis of surface as opposed to mass; and the tremendously increased importance of the silhouette under the application of the set-back laws.

These adjustments are gradually taking place. The trend of the new design may be briefly and cursorily traced by considering the Park Avenue Hotel, the World Building, the Waldorf-Astoria Hotel, any loft building in the Fifth Avenue twenties, the Plaza Hotel, the Woolworth Building, Pierre's and Sherry's, the Fisk Building, and the new Shelton Hotel on Lexington Avenue.

It should be noted that while economic pressure tends on the one hand to make buildings structurally modern, on the other it tends to hold back aesthetic progress through fear that "novelty" in appearance may hinder rentability. It is for this reason, as well as for aesthetic ones, that so many of our commercial structures are clothed in ill-fitting garments.

Although there is slow but evident progress visible in our commercial work it is nowhere visible in our public edifices, where the question of expense is not so fundamental, the desire for conspicuous waste often a ruling motive, and the dead hand of academic tradition falls most heavily. With the exception of the design for the Nebraska State Capitol, none of our recent public buildings show the slightest attempt to develop an architectural expression in accord with either the structural system or their surrounding civilization. Their steel frames are swathed in mummycloths. The absurdity of steel-framed

masonry domes! The sterility of rows of useless columns! Endless modillions and garlands taking the place of imagination and suitable invention! How can they be other than ostentatious, dreary, and monotonous?

Almost as little evidence of change is to be found in our domestic architecture. Characteristically enough, the more expensive the work, the more time expended upon it, the less the progress. The reason here is not only the comparative lack of economic pressure; there is a simple psychologic factor involved. A man's house is what he lives with, and to most men the most usual is the most livable. Anything "different" in the way of a home would make him feel as ill at ease as a purple shirt with lace ruffles. Then, too, the rich man sees a villa or a palace abroad, and because it costs more to build, and looks it, he must have it reproduced here—the Palazzo Massimi on Fifth Avenue, a Tudor mansion on Long Island, a Brittany farm house in Westchester. Of course structural methods in the domestic field have not changed so radically as they have in larger building; it is not, perhaps, so heinous an offense to build a modern brick house in imitation of an old one. However that may be, our most living—if not livable!—domestic work is to be found in the model-housing industrial villages, where rigorous elimination of waste and the need for quantity production have prevented the aping of a long-dead craftsmanship, and simple, good effects have had to be obtained by the use of machine-materials, "untouched by human hand." In the same way, the noticeable increase in restraint and "good taste" in the speculatively built apartments in New York, which has received favorable comment in many quarters, has not been at all due to an increase in good taste, but to the prohibitive cost of gimcrackery.

Economic forces will thus in time bring about a new architecture aesthetically, as they have already done structurally, replacing mass and shadow by surface and silhouette. Proportion, the basic factor of good design, will always remain the chief factor. However, good proportion and its concomitant, good "scale," are not absolute, as the academicians like to think, but depend on inter-related relationships—the size and shape of the building, the relation of its many parts to the human figure and human needs, the materials used, and the system of construction. Good classic, gothic, and steel proportions are very different things, although many architects seem to think they are interchangeable. A rhinoceros skin does not fit a giraffe, nor even a cow, though all are mammals.

When modern structural methods are followed out to their logical conclusion, the results are progressive and interesting architecture. When eclectic aestheticism is followed, when "art" is the inspiration, the result is only pretense and puerile copying. Only from a building which answers inevitably to our modern needs do we get a modern emotion, a feeling of hardness, steel, vibration, discordant beauty, an emotion satisfying to our modern spirit. It is not beauty as the Greeks understood beauty, nor emotion as the builders of Chartres understood emotion, but it is life as it is understood today.

We need fewer artists and more architects; less art and more architecture. When we finally get that, we shall not need to look either humbly or reverently toward Athens, Rome, or Paris.

* * * *

Architects' Meeting—A Pleasant Time Assured

"There will be no speeches. The entire evening will be given over to entertainment."—Exchange.

BARRICADE FOR S. W. STRAUS BUILDING, CHICAGO
Graham, Anderson, Probst & White, Architects

Sidewalk Protection During Building Construction

A Concrete Example for Pacific Coast Contractors to Follow

By S. J. T. STRAUS

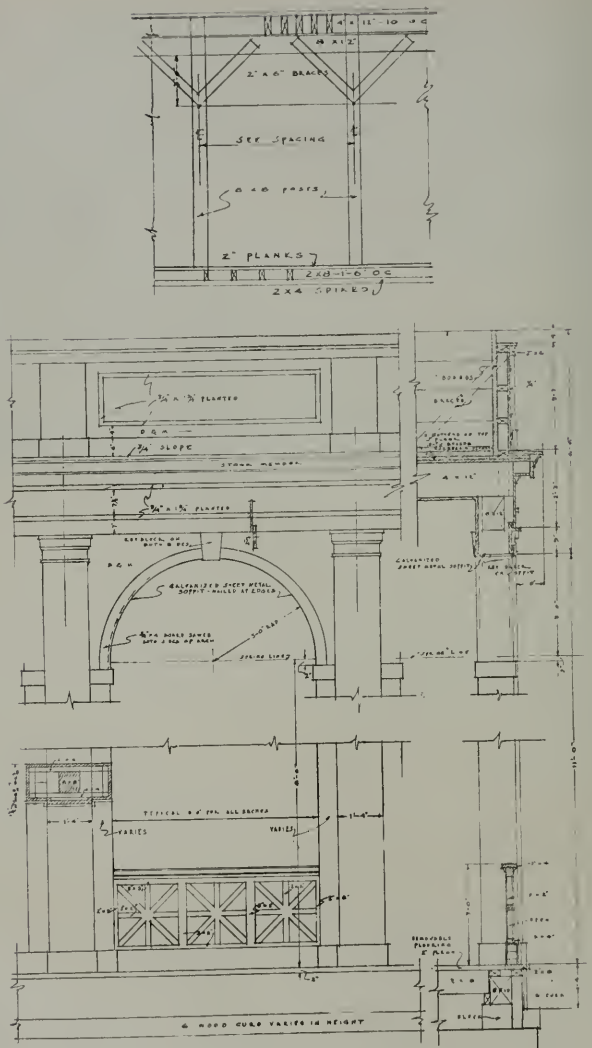
CHICAGO Beautiful has been made possible only through the desire of her citizens to build the City Incomparable. From this civic pride there has developed the Chicago Plan, with such possibilities as the lake front development, the Field Museum and the new campus of Northwestern University on Chicago Avenue. This plan calls for both public and private cooperation in providing structures both utilitarian and beautiful.

In harmony with this desire S. W. Straus & Co., mindful of the beauty of the city, have provided that their new home, even during the period of its erection, will present a pleasing appearance, in harmony with the beauty of Michigan Avenue, the country's finest boulevard.

In keeping with this idea we have provided an ornamental barricade on the street sides of the new building, a barricade unequaled in previous Chicago building construction.

In traveling in other cities and in going about Chicago thoroughfares the writer has been particularly impressed with the unsightliness of building construction. The usual protective barricade has been an ugly affair, unpainted and awkward in construction.

When the occasion arose to consider a barricade for our 32 story building now being erected on Michigan Avenue at Jackson Boulevard, I protested against the common type of barricade, feeling that something more artistic could be provided at only a small fraction above the cost of the common type of barricade. On investigation I learned that my idea was correct, and accordingly the architects, Messrs. Graham, Anderson, Probst & White, were given instructions to provide a protective barricade that would be an artistic asset to Michigan Avenue rather than a liability.



DETAILS FOR BARRICADE, S. W. STRAUS BUILDING, CHICAGO
GRAHAM, ANDERSON, PROBST AND WHITE, ARCHITECTS

The barricade is evidence that new building construction need not be unsightly. It is a blending of former types of barricades. In times past the cover was mere protection to pedestrians, without any consideration for the public other than the prevention of accidents from falling bricks and other materials. In addition, inconvenience was caused by lumber, brick and stone piled high adjacent to the building operations, without any regard for traffic considerations.

The design was submitted to the South Park board for its consideration and suggestions. The plans were thoughtfully considered both from the standpoint of protection and civic regard for the city.

The barricade has beautiful archways, wide pathways without the interruption of disturbing wooden column. It is painted in pleasing colors, which match well with the stone facing of the building. The colors were chosen after four decorators experimented to determine the best color combination. Other cities are beginning to realize the need for barricades of ornamental design and have found that the cost of the beautifully designed barricade or canopy is only slightly greater than the cost of a bare protective barricade. It is our hope that the builders of new buildings will accept the precedent set in the ornamental barricade at the Straus building.

The margin between the cost of the usual barricade and a barricade of ornamental design is very small. The principal cost lies in the heavy timbers necessary in the construction. The slightly higher cost is more than compensated for in the added prestige, which perhaps more than any other factor, has called favorable attention to the building.

* * * *

New Slate Tile

There has recently been perfected a process to utilize slate waste in the manufacture of a white tile suitable for use in bath rooms, toilets, laundries and vestibules. The tile can be made in a variety of sizes, either square or oblong, and in appearance and after it is treated it cannot be distinguished from the pottery tiles. The process of manufacture, although just emerging from the experimental stage, provides for the use of very thin split slates sawed to the proper dimensions and one surface polished, after which the white surface is applied. As the splitting, polishing and coating process already have been perfected, the inventors expect to begin manufacture on a quantity basis in the near future. In addition to the white tile product, the inventors also have been able to produce vari-colored tiles, including blue, variegated and other natural slate colors of red and green for decorative uses.—Stone.

* * * *

February Building in San Francisco

Building operations in San Francisco for the month of February, 1924, totaled $3,912,166, an increase of $733,753, compared with the preceding month, and an increase of $633,490 compared with February, 1923. Following is the report compiled by the San Francisco city building department of permits for February, 1924:

Class	No. Permits	Est. Cost
"A"	1	$75,000
"B"	1	150,000
"C"	30	951,700
Frame	369	2,290,079
Alterations	393	445,387
Total	794	$3,912,166

City Planning and Housing

CAROL ARONOVICI, Associate Editor

The Regional Survey

By CAROL ARONOVICI
City Planning Consultant

REGIONAL planning implies a program of development, an outlook beyond political and administrative bounderies, and beyond the confines of the life of a single generation. Europe is rich with buildings that were in the building as long as it has taken to conceive and build a nation or an empire. We are still bowing our heads in humility before the stupendous Greek and Roman monuments, and Gothic churches will for many generations serve as models of religious architecture.

In the building of cities there is room for the same organized thought, the same expression of idealism, the same disregard of the present except as it will also serve the future. Regional planning merely goes one step further and looks to the family of communities instead of the individual community as the unit around which to develop social, economic and esthetic ideals.

The regional survey should therefore be a stock taking of all natural and human factors that have determined the character and development of the region and that may be utilized to advantage in the promotion of future development.

This brief article is hardly the place for an elaboration of the details to be included in a regional survey. All that can be done is to give a bold outline that would leave to the intelligence, knowledge and imagination of the reader the task of filling in the details.

The geographic location of a region is the skeleton upon which the flesh of the social organization must be built. The rivers and the mountains, the nearness of the sea with its harbors and trade winds, the natural beauty of the landscape and its capacity for development and use in the interest of man, the temperature and its variations, the winds and rain, the soil and its fertility, the fauna and flora, the mineral resources, the water supply, all are important in their own way and have their place in the development of a community and a family of communities. New York was first a gift of nature, and the work of man second. San Francisco owes more to the Golden Gate than to the stock exchange.

HISTORY

Man's relation to the natural environment makes up the most important part of human history. Pioneering is the most stimulating and inspiring element in human history. The conqueror of nations comes with a horde, the conqueror of nature is on a peaceful mission and goes alone. As the pioneer is followed by the mass of mankind, a new chapter in the history of a region is marked; and the type and character of the masses that take possession of a region will determine the character of that region. The steps in the pioneering, conquest, development and upbuilding of a community are the true history of a locality. These events are interwoven with future possibilities and no survey is complete and no program practical unless it takes account

of historic facts as they have affected the population and as they must affect the heritage of the future. Let us remember therefore that the history of the generations to come will only be worthy of the history of the generations that have gone if we take account of facts as they relate to the upbuilding or destroying of community assets and the meeting of community liabilities.

PSYCHOLOGY

Modern science has furnished us with much information regarding human psychology both as individuals and in groups. We must admit that there is much yet to be learned and discovered, but the scientific basis of study is available. Unfortunately cities or groups of cities as subjects of psychological study have not attracted the great minds in this field of modern science. The novelist is perhaps the only pioneer in this field. Zola's "Paris" is an outstanding example of city psychology. Sinclair Lewis's "Main Street" has made quite a stir recently in this country. But even in literature there is little of great value as community psychology from the point of view of the city or regional planning survey.

We need a new technic and a new knowledge along this line. Race psychology, group psychology, occupational psychology are the component factors of this new field of science, but until it is correlated and expanded to the more complex aspects of community life as represented by its various units, we shall only guess at the needs of the soul while we delude ourselves into mistaking the body for the whole man.

There are traditions of religion and culture, there are social habits and customs, there are desires and aspirations toward self expression through art or vice, there are sentimentalities of family or group, there are institutionalized expressions of new or antiquated ideals of public service or private benevolence, there are established methods of intercourse, there are antagonisms and hatreds due to social, religious or political anticedence all of which must be taken into account in the upbuilding of a regional program and plan. They are not only worthy of study, but they are the forces which must be utilized or destroyed in building up a mentality that will carry the plan into reality.

Perhaps we shall develop some studies that will lead to community psycho-analysis and we shall be able to interpret its repressions and dreams. We might even hope to cure our cities of some of their mental diseases and incapacities by probing into the abnormal psychology of the group mind. These fields are still open to the scientist. Let us discover our common weakness if thereby we shall build up our common strength.

ECONOMIC LIFE

A community or a region exists by virtue of its economic efficiency and enterprise. What a community produces or fails to produce with resources at hand must be known. How trade and industry have developed, how the productive and administrative labor of the people is divided, how the rewards of labor are distributed, how capital is accumulated, used and distributed, how freely money pioneers in unexpected fields of industry and commerce should be known. The economy and efficiency of production and distribution, the margin of profit and the standardization of prices are factors that limit or retard a region. A picture of economic life will reflect the economic welfare of the future, and will make possible efficient planning.

HOUSING

In selecting housing out of the long list of social facts relating to regional planning we are throwing out of perspective a subject that

belongs in its place as part of the general considerations of human welfare. It must be remembered, however, that the home is the place around which much of our social and economic efficiency revolves. One might say that the character of the home is the measure of the advance of a nation or a community.

The tendency toward the constriction of home activities due to the development of the miniature home as represented by the tenement, apartment and bungalow court is constantly reducing the sphere of the home and expanding the sphere of the street and the public place.

Regional planning with its possibilities for the rehabilitation of the home as a center of individual and family life brings new promise. A housing survey will reveal the facts of the new pathology and the new economics of home building and will give inspiration to the promotion of a higher standard of family life. The needs are obvious, the dangers are freely discussed and admitted but the remedy must come through a knowledge of all the facts.

POPULATION

All communities in the last analysis can be reduced to two elements: the natural environment and the human or populational factors. In the study of regional conditions the quantitative and qualitative character of the people is quite essential. Not only numbers are important, but the distribution of these numbers over the region in question, the consideration of congestion or sparseness,the extent to which population has become fixed or has drifted with the current of new avenues of travel and new opportunities for home making, all are important in showing the trend and prospects of community expansion or retardation.

The centripetal forces which attract population to the congested centers of cities are constantly being counteracted by centrifugal forces which create satellite communities either as centers of habitation or centers of production and exchange. The laws that govern these extensions of individual communities and stimulate the creation of new communities can only be known after consideration of the facts relating to the ebb and flow of population in a given region.

The social and national factors, the economic and social class distinction which are not recognised in this country but which exist nevertheless, should be studied from the point of view of populational distribution. Consciously we may not plan with class distinction in mind but economically class distinctions are unavoidable in considering the economics of community planning and development.

CIRCULATION

We are living in an age of travel and movement. To release the creative forces of the community we must provide for the free movement of these forces from place to place. Highways and byways, soil conditions, transportation, aerial travel, are interwoven with the fluidity of population and its products. Barriers in the way of movement of population are also barriers in the way of development of individual communities and their related groups. Given certain natural values of agriculture, industry or trade, the avenues of travel will transform these values into human assets.

The very essence of a regional concept from the planning point of view must depend upon the efficiency and extent of the fabric woven by the arteries of travel whether that be by water, on land, or in the air.

The practical size of a region is determined by the extent and convenience of the means of travel. The regional plan must find its framework in the avenues of travel.

LAW

The upbuilding of cities, towns and villages has been co-extensive with the amassing of volumes of legislation, much of which is valuable. There is, however, a class of legal regulation and restriction which in its nature is antagonistic to intercommunity cooperation and is therefore inconsistent with regional planning.

It may take a half a generation to repeal such legislation. The sooner we take account of its existence and point out its objectionable features the sooner it will be replaced by new and better methods of legal control. Half forgotten laws the shades of which hover over the forces of progress are more dangerous than the laws that affect us daily and individually. The former are likely to be remembered at the wrong time, while the latter are with us daily and will be changed frequently if they interfere with our best interests.

The regional plan requires sound legal foundations. A study of existing laws will lead to more intelligent law making and more drastic pruning of obstructive regulation and control by law.

Perhaps I have said enough to point the way toward the possibilities and advantages of the regional survey. Only the peaks of the subject have been touched. The intricacies and complexities of the physical environment and the human factors are before us. What we need is the skill, the patience, the money and the honesty of purpose that will reveal the facts as they are without regard to local pride, without regard to special and vested interests, without fear of disturbing the settled ways of people and communities, and without prejudice against individual, class or groups who may have stood in the way of progress, and without concession to the restless elements who mistake motion for advancement.

* * * *

BOOK REVIEWS

Charles M. Nichols—Studies on Building Height Limitations in large Cities, with special reference to conditions in Chicago. The Chicago Real Estate Board Library, 1923.

One of the most valuable documents recently published by a semi-public organization is this volume of studies relating to the problem and control of heights of buildings in the city of Chicago. It is one of the best documented surveys available and contains not only valuable data relating to both European and American cities, but also a program of control that would be valuable to any city in the United States when considering the limiting of building heights.

We have reached a point in this country when the relation between the capacity of the street and the capacity of the buildings must bear some intelligent mathematical relation that would distribute land values and give the city an adequate system of circulation.

The recent report of Raymond Unwin, which we shall review at another time, has shown how obviously confused and costly the present system of building is, and that a remedy must be found at an early date if our cities are to survive as efficient social entities.

The report relating to Chicago should be read by all those who believe that land sweating is the legitimate outgrowth of city development, and that control which would do away with such land sweating is an interference with private property rights.

Robert Whitten—Cranston Zoning Plan.

Many of the smaller cities through the United State are slowly coming to the realization that it is never too early to establish a zoning plan owing to the fact that zoning plans are flexible mechanisms of control that can be changed with the development and growth of the community.

Mr. Robert Whitten of Cleveland, has developed a plan for Cranston, R. I., which for simplicity and adequacy in the control in the development of small communities is quite unusual. The plan was accepted by the City Council.

Traffic a Part of the Pittsburg, Pennsylvania, Plan—Citizens Committee on City Planning, Pittsburg, Sept. 1923.

The Pittsburg Committee on City Planning has been divided into a number of committees each dealing with its own subject. These committees have issued separate plans on each aspect of community needs, and six such reports have been issued recently. These reports cover the following subjects:

1. Pittsburg Playgrounds
2. A Major Street Plan for Pittsburg
3. Traffic
4. Pittsburg Parks
5. Railroads of the Pittsburg District
6. Waterways

Other pamphlets along this line are in preparation.

Zoning Ordinance and Zoning Maps of Pittsburg.

The City of Pittsburg has recently framed a zoning ordinance which follows the lines of other ordinances of this type and embodies many of the features contained in the model zoning ordinance issued by the United States Department of the Interior.

The report issued in the form of a portfolio contains some very interesting maps that should prove of value to any one interested in zoning.

Report of Commission on Housing and Regional Planning of the State of New York.

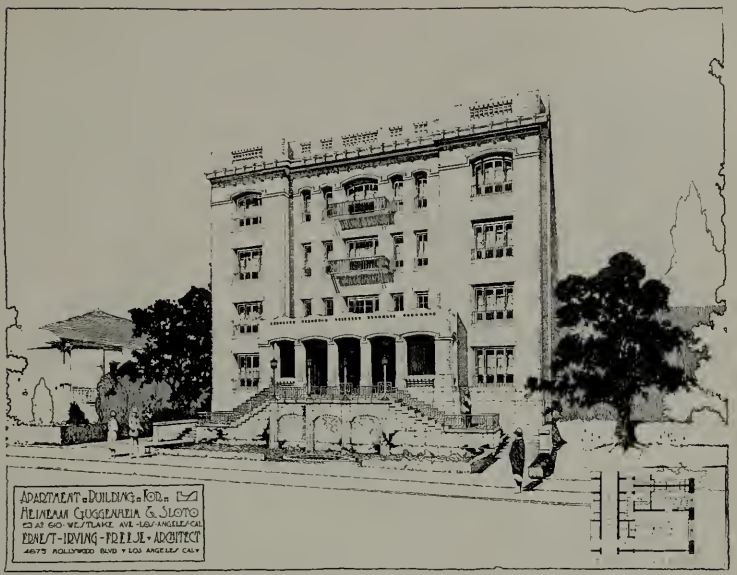
Through its Bureau of Housing and Regional Planning, New York has recently issued a report on the present status of the housing emergency which contains extremely valuable data relating to the housing shortage and the reports of a number of hearings containing the speeches of prominent men who have been more or less directly connected with the inquiry regarding high rents, shortage of housing, and the general problems of the expansion of housing facilities for New York.

Those particularly interested in rents and housing shortage will find in this report information pointing toward the methods of solving the housing shortage and the methods of creating equitable relationship between owners and tenants.

* * * *

Marble Bank Interiors

That the public demands beautiful surroundings in which to transact business is a fact long recognized by corporations and institutions having dealings with large numbers of customers daily. And so marble interiors, in whole or in part, have become an almost inexorable part of modern architectural designing. As the difference in cost between natural and artificial marble is so slight in comparison to the beauty and quality, architects are specifying the genuine article and the results have been found to be much more satisfactory not only from the standpoint of beauty but of permanency.


APARTMENT BUILDING FOR
HEINEMAN GUGGENHEIM & SLOTO
AT 610 WESTLAKE AVE LOS ANGELES CAL
ERNEST IRVING FREESE ARCHITECT
4673 HOLLYWOOD BLVD LOS ANGELES CAL

APARTMENT BUILDING, LOS ANGELES
Ernest I. Freese, Architect

Developments in Garage Design

THE auto laundry is a general name for various high-speed methods of washing cars which have been developed by men all over the country in the last two years.

The auto laundry method has proved so successful that it must be considered a desirable feature in every new garage. It is miles ahead of the old method of cleaning one car at a time on a wash rack.

There is no standard practice as regards the design of the auto laundry but the fundamental idea in each case is to turn out, as clean as can be, a maximum number of cars in a day with a minimum amount of labor. To accomplish this, the auto laundry is divided into departments, and the number of departments and equipment used varies according to the views of the individual builder. A five-department auto laundry would divide the operations as follows: 1, Sweeping and dusting (top and interior); 2, Soaking; 3, Washing; 4, Drying; 5, Polishing.

1. In the sweeping and dusting department, brooms, feather dusters and perhaps a vacuum cleaner are used.
2. In the soaking department, it is not unusual to have a special shower-bath arrangement which sprays the sides and the under part of the car thoroughly, softening all mud and dislodging a great deal of dirt in a very short time.
3. Then the car is pushed on to the washing department where it is hosed and sponged, and every vestige of dirt removed, soap being used where necessary.
4. In the drying department, the car is thoroughly dried with chamois.

ERNEST IRVING FREESE ARCHITECT
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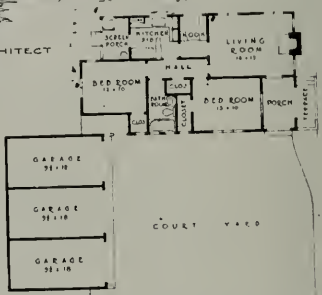

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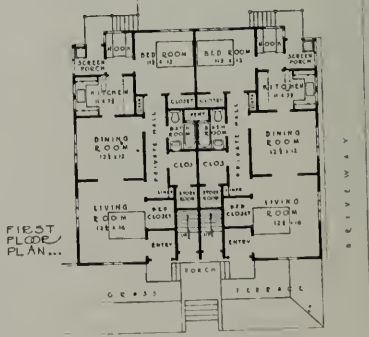

FIRST FLOOR PLAN...

5. In the polishing department, the glass is cleaned and the metal work polished.

The five-department auto laundry represents one extreme. The other extreme is a two-department auto laundry, in which case, in the washing department, the mud and dirt are thoroughly soaked off and the car is thoroughly hosed and sponged until all dirt is removed, while in the drying department, the car is dried, the glass is cleaned and the metal polished, and the interior of the car is swept and dusted.

* * * *

Tasks Performed By Electric Energy

The French Government, after exhaustive research and experiment, has found that one kilowatt hour of electricity will—

Drive a sewing machine for 20 hours;
Clean 15 steel table knives for a year;
Heat water for shaving one month;
Clip 5 horses or 25 sheep;
Light 3 cigars a day for 5 years;
Heat a flatiron for 3 hours;
Boil 2.37 gallons of water;
Fry 15 chops in 15 minutes;
Heat a curling-iron for 20 mornings;
Incubate 250 eggs;
Milk 20 cows;
Separate cream from 350 gallons of milk;
Churn 440 pounds of butter;
Chop ½ ton of straw.

The cost per kilowatt hour of electricity in New York is 7 cents. The average charge in the United States is from 11 to 12 cents.

* * * *

Tests Point Way to Safer Elevators

About three-fourths of all fatal elevator accidents are found to occur at the hoistway door, either because of the door being opened when the elevator is not there or because of the elevator starting when the door is open. These accidents can be prevented by a reliable interlock, as when such a device is used the elevator must be stopped at the floor before the door can be opened, and the door must be closed before the car can be started again. Seventy-five per cent of fatal accidents are preventable.

During the past year the Bureau of Standards has been conducting tests to determine the reliability of the various types now on the market. The devices have been given endurance tests under normal conditions, they have been tested in a corrosive atmosphere, in a dust laden atmosphere, without lubrication, and under conditions of misalignment likely to occur in practice.

The tests were conducted at the request of the City of Baltimore, and will permit city governments to base their approval of such devices on actual performance tests instead of on visual inspection alone. The results have also been made available to the manufacturers of the devices tested, and in most cases they have improved their designs in accordance with the suggestions offered.

* * * *

Plenty of Knowledge at Home

American—"I suppose your son's thirst after knowledge led him to travel in Europe this winter?"

Second American—"No; merely his thirst."—Tit-Bits (London).

THE
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WHY THE ARCHITECT?

In all buildings both beauty and utility should be present. If this is to be secured it will require the services of a highly trained architect. Because of this requirement the laws regulating the qualifications or architects are growing more and more stringent. The American Institute of Architects does not consider a "competition" desirable except for certain forms of public and semi-public work. Society has the right says a statement by the A. I. A. to demand that no building be ugly; the life of the community requires that they be not wasteful of space or ill-suited to the purpose for which they are created.

Because of the great building expansion that is going on in the Northwest at the present time the foregoing facts are worthy of careful thought and consideration. Shall buildings go up that reflect the beauty of the landscape or shall any hodge podge be constructed. There is a more ready sale for the well designed, well constructed building. But no ordinary person can give the public this kind of a building. Only those who have been trained in the field of architecture are capable. For this reason the standards of the architectural profession should be maintained at a very high point.

The success or failure of the building depends more entirely upon the architect than upon any other person. He is the disbursing officer of the client. Money is entrusted to him to be spent. He must pudge wisely and well his expenditures. Wisely administered duties greatly reduce the cost of buildings. The architect therefore must be selected with care. When this is done the client reaps the benefit by receiving full value for the funds expended and the public at large is benefited by more beautiful and useful buildings.

CREDIT FOR AMERICAN ARCHITECTS AND ENGINEERS

American architects, engineers and contractors are sure to find a measure of gatification and pride for American construction methods in the, as yet unconfirmed reports, from Japan. In all of the vast area affected by the series of earthquakes and the resulting fires, six buildings in Tokyo of the so-called American type remain standing, according to more or less authentic reports, says a writer in Stone. Lessons learned at the time of the San Francisco earthquake, of course, were of valuable assistance to the builders of these six structures, and it is more than probable that the new Tokyo will contain large numbers of modern structures erected with due regard to every known safe-guard against seismic disturbances.

SOMETHING NEW IN OFFICE BUILDING DESIGN

Architects in search of new ideas for their clients doubtless will manifest keen interest in the outcome of a daring departure from the conventional in office building construction made by Mr. Raymond M. Hood, associate with Mr. John M. Howells, winner of the first prize in the recent Chicago Tribune building competition. Mr. Hood has designed a thirty-story office building which is to have a facade of black brick and gold colored stone trimming, worked together to give a rich black and gold decorative effect. The building has already provoked wide discussion in professional circles because of its unique design.

Describing its unique features Mr. Hood is quoted as saying: "The radical departure from standard practice arose from a feeling that so many office buildings are monotonous if not ugly. Monotony and ugliness in office building seems to come from the fact that the windows are actually black holes and the regular spacing of these black holes makes a building look like waffles or doormats hung up to dry. The solution to this problem lay in finding a color of wall that would tie together the black holes, and make them less apparent. But, as the building progressed, we found it struck a very cheerful note. The idea for gold trimming came next and caught the fancy of us all. Precedent, at least in Europe, pointed to other periods of architecture where black had been used effectively, particularly, for example, in the Grande Place of the Hotel de Ville, Brussels. In Pompeii, also, and in France at the time of the Empire, whole rooms were done in black with only a slight relief of color.

"We felt that the old problem in office building design demanded a new solution and that just as other architects have broken away from conventional treatment in certain directions and raised the standard to higher levels, we might contribute a new plan of coloring which would make for progress."

RESULTS OF ELECTRICAL SURVEY

A questionnaire recently sent out by The Architect and Engineer shows that the popularity of the use of electricity for cooking, air heating and water heating has been increasing rapidly and that architects are giving more attention to the completeness of the electrical specification.

Architects as a general rule do not get enough percentage from the smaller jobs to give much time and attention to the electrical specification. However, if the exact quality of the material and equipment to be installed is not mentioned, the contractors usually figure on the cheapest grade in order that their figure will be the lowest so they can get the job. The result of this condition is obvious. The owner would get a one-sixteenth inch switchplate instead of three-sixteenths inch—a poor grade of wire—or a competitive switch instead of a high grade switch. As a number of the architects asked to be advised of the results of this survey we are giving here a detailed report of the returns.

QUESTIONS AND ANSWERS

1. For what percentage of your jobs do you write the electrical specifications? 89 per cent average
2. Do you specify by either the trade name or the manufacturer's name the following equipment?
   - Convenience Outlets.. Yes 78—No 8
   - Switches ..... Yes 81—No 2
   - Conduits ..... Yes 54—No 22
   - Ceiling Outlets and Socket Units ..... Yes 52—No 24
   - Lighting Fixtures..... Yes 32—No 38
   - Wire ..... Yes 60—No 24
3. Do you insist that the electrical contractors use only the material and equipment you specify? Yes 72—No 18
4. Do you have any trouble securing delivery of goods as specified? Yes 26—No 58
5. Do you specify completeness of electrical equipment so as to provide wiring devices and conveniences out-

lets for using all the latest convenience appliances?
Yes 78—No 12

6. Do you recommend the installation of an electric range?
Yes 42—No 24 In some cases 28

7. Do you recommend the installation of an electric water heater?
Yes 30—No 40 In some cases 20

8. Do you recommend the installation of electric air heaters?
Yes 20—No 52 In some cases 26

9. Even though the builder of a residence or an apartment may not indicate the desire for an electric range, water heater or air heater, do you recommend the installation of proper wiring to permit later tenants or owners to use such equipment?
Yes 68—No 16

10. Do you specify by name particular makes of ranges, water heaters, or air heaters?
Yes 46—No 30

11. Do you provide adequate space for a washing machine in the laundry or on the porch?
Yes 88—No 2
If so, do you provide a convenience outlet?
Yes 88

12. Do you specify a switch (on the open side of the door) at every doorway for the convenient switch on and off of lights?
Yes 78—No 8

PLASTERERS TAKE NOTICE

The American Contractor, in a recent issue, reports that a plastering machine has been perfected in New York City, and that a test was conducted recently in which 733 square yards of plaster were applied by one man in eight hours, time. When plastering mechanics are receiving from sixteen to twenty dollars a day, it would be at once apparent that the saving effected by the use of the machine is a considerable item.

PASSING OF HENRY BACON LOSS TO ARCHITECTURE

The death of Henry Bacon is a blow to American architecture and art. A man of extraordinary skill and ability, he has raised more than one monument to himself, but of these none will redound more to his glory than the Lincoln Memorial in Washington. So great were his talents that, it is related of him, he never entered a competition without winning it. But he was so modest, so unassuming, so little desirous of advertising himself that the great public knew all too little about him. Indeed, his were the simplicity and modesty of true greatness. His loss, at the age of only fifty-seven, to the profession which he honored and uplifted is beyond measuring.—The Nation.

Travel Courses in the Fine and Applied Arts

Plans for a series of travel-courses in the fine and applied arts this summer have been announced by the Institute of International Education, 522 Fifth avenue, New York. The plans provide for four over-lapping courses, with emphasis on painting and sculpture, on architecture and interior decoration, on landscape design, and on history, respectively. The purpose of the undertaking is to enable students to make a study of the great works of art, architecture, and design in Europe, under scholarly instruction and at minimum cost.

The study of important buildings and decorative compositions in Europe, the examination of drawings and models by the world's greatest designers, and the sketching or photographing of details of architecture and ornament, will be one of the courses with Professor Albert C. Phelps of the College of Architecture, Cornell University, as lecturer.

Another course will include an historical and technical study of the development of landscape design as exemplified in the Roman and Florentine villas, villas at Tivoli and Frascati, the Chateaux of the Loire, gardens in and near Paris, and many of the important gardens and estates in the British Isles.

Lectures and field-work will be in the hands of Professor Edward Lawson, first Fellow in Landscape Architecture at the American Academy in Rome, and now assistant professor of Landscape Architecture at Cornell University.

The present undertaking is a continuation of the series of courses in travel which the Institute of International Education inaugurated four years ago for the purpose of providing objective educational travel of a high order, at minimum cost, and under non-commercial auspices. Dates of sailing and other details may be secured from Irwin Smith, Times building, New York, or from the Institute of International Education, 522 Fifth avenue, New York.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

Architectural Exhibition

From April 7th to the 12th an architectural exhibit will be held in the rooms of the Bohemian Club, San Francisco. At the same time there will be a showing of paintings and sculpture. The exhibition will be for the benefit of the public to stimulate interest in the arts. It will be the first time that the rooms of the Olympic Club have been thrown open for an event of this kind and from present indications there will be a splendid showing made by the architects of San Francisco and the Bay region. The committee of arrangements is composed of Messrs. Charles Bauer, Earl Bertz, Herbert Schmidts, William A. Newman, Louis M. Upton, Harris Allen, B. J. Joseph, Haig Pattigan and Frank Van Sloun.

Residence Activity At Pebble Beach

Many new country homes are being planned for Pebble Beach in Monterey county. The list includes a Spanish country house for Mrs. Maud Bourn Vincent, being designed by Architect George Washington Smith of Santa Barbara, also a house by the same architect for Mrs. Templeton Crocker, of San Francisco. Architect Clarence Tantau is designing three large homes at Pebble Beach, one of which is for Mr. W. R. Alberger, vice-president of the Key Route System. Architects Johnson, Kaufmann & Coate, of Los Angeles, are preparing plans for a Pebble Beach summer residence for Mrs. Malcom McNaughton, of Pasadena.

Death of Santa Barbara Architect

Architect J. Flood Walker died Feb. 24 in a hospital at Santa Barbara after an illness of three weeks. He was born in Bingham, N. Y., in 1868. His first architectural experience was in the office of the late R. B. Young of Los Angeles. Later he went to Seattle, where for a number of years he was member of the firm of Walker & McManus. From Seattle he went east and practiced successively in New York City, Chicago and San Antonio, Tex. About ten years ago he returned to California and for a number of years maintained offices at Santa Ana and San Diego. He went to Santa Barbara two years ago.

Berkeley Architects Busy

Architect W. H. Ratcliff, Jr. has completed plans for the first unit, consisting of a library, of a group of buildings for the Pacific School of Religion. This structure will cost $100,000 and will be faced with Indiana limestone. Mr. Ratcliff has recently awarded contracts for two residences, one for Mr. A. H. Halloran in Claremont Court, and one for Mr. M. R. Demster on Spruce street, Berkeley. Mr. Ratcliff has also completed plans for a two-story apartment house at Euclid avenue and Hilgard street, Berkeley, for Mrs. Wright, and for a country house at Carmel Highlands, Monterey county, for Mrs. Caroline Hollis.

Architect J. W. Plachek has completed working drawings for a $75,000 addition to the Masonic Temple, Berkeley. Contracts have recently been awarded by the same architect for a branch public library at Ashby and Benvenue avenues, Berkeley, to cost $21,000 and a one-story store building and warehouse on Center street, near Shattuck avenue, Berkeley, for Mr. F. L. Naylor, to cost $15,000.

Sacramento Architects Have Much Work

Architects Hemmings and Starks, of Sacramento, have more than $2,000,000 worth of work on the boards or under construction, including the $900,000 Elks building; new edifice for the Pioneer Memorial Church to be built opposite Fort Sutter, at a cost of $110,000; a department store building for Chas. P. Nathan & Son, costing $300,000; a one-story factory for the J. P. Hynes Packing Corporation; a two-story industrial building for the W. P. Fuller Company; a one-story store building in Oak Park for the Lewis Estate Company, and a one-story factory at 20th and G streets, for the Wm. A. Rapp Company.

Bank and Office Building

The directors of the Central National Bank of Oakland have commissioned Architect George W. Kelham of San Francisco to prepare the plans for the bank's new home to be erected on the site of the present building at Fourteenth street and Broadway, Oakland. The structure will be a combination bank and office building of the skyscraper type of from ten to twenty stories, the exact height to be determined later.

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Montana Architects Elect Officers

The Montana Association of Architects which met recently in Helena elected the following officers for the coming year:

President, W. R. Plew.
Secretary-treasurer, R. C. Hugenin.
Director for three year term, H. E. Kirkemo.

The next annual meeting will be held in August at Missoula. At this meeting the Association expects to have on exhibit for visiting architects and for the general public, drawings and plans submitted by architects throughout the state, showing the class of work being done in Montana. The Montana association also intends to publish this year a pamphlet on small rural schools of one and two-room capacity, for the aid of the rural school districts of the state.

Oakland Labor Temple

Plans are being completed by Architect W. J. Wilkinson of Oakland, for the proposed new labor temple to be erected by the affiliated labor organizations at 11th and Franklin streets, Oakland. A feature of the building will be a parking garage in the basement to accommodate 126 cars. Building will also contain an auditorium to seat 2000 persons, various club rooms, two stores and forty offices.

Williams and Wastell Busy

New work in the office of Architects Williams & Wastell, American Bank building, Oakland, includes a two-story reinforced concrete store and apartment building on East 14th street and 88th avenue, Oakland, for Mr. S. A. Mundell, and residences for Mrs. R. Lloyd in Claremont and Mrs. Edith Beasley in North Berkeley, to cost $12,500 each; also residences in North Berkeley for Messrs. Dean Ingraham, P. L. Wyche and W. M. Deming.

Joins Architectural Firm

Mr. Vern D. Hedden, head of the building inspection department of Long Beach, has resigned his position, effective April 1. The resignation has been accepted.

He will be associated with Architect Victor Siebert, formerly of Walla Walla, Wash., in the practice of architecture and as consulting specialist in building code and zone law counselling, with offices at 203 Brock building, Long Beach.

Packing Company to Build

The Alaska Packers Association will build a terminal, wharves and warehouse on the Alameda side of the inner harbor, San Francisco Bay, at a cost of $1,100,000. The plans have been prepared by Engineers Frank G. White, and Phillip Bush.

Mr. Boyd's Visit to Coast

Mr. D. Knickerbacker Boyd, a prominent Philadelphia architect, at one time secretary and then vice-president of the American Institute of Architects, and now the executive vice-president of the American Construction Council. was recently entertained by the various Coast Chapters. He was accompanied by Mrs. Boyd.

Mr. Boyd expressed his pleasure at visiting the Pacific Coast, which he had found most inspiring and complimented the Far West Institute members on the influence they were exerting in the practical aspect of their community life. He was particularly interested in the architect as a master craftsman. If the architect could not co-ordinate his work with the workmen on the job, he was not truly an architect, however much of an artist he might be. Mr. Boyd considered that architectural superintendence should not confine itself to the condemnation of unsatisfactory work, but should increase the workman's desire and ability to produce satisfactory results by commending the work well done, not so much as to the technical correctness of the workmanship, but rather an expression of appreciation of the workman's giving him the result he was endeavoring to produce.

Mr. Boyd believes also in co-operation and sympathy with the draftsman, who is a co-operative worker, in obtaining what we endeavor to accomplish. The draftsman, he thinks, should be given an opportunity to come more in contact with the workman on the job to gain the proper sympathetic feeling in regard to the co-operative undertaking.

During his stay in Los Angeles, Mr. Boyd attended sessions of the Common Brick Manufacturers' Association, for which he is consulting architect, and the Southern California Chapter, A. I. A.

The Chapter is giving considerable attention, at the present time, to the question of the business practice of an architect's office. Mr. J. E. Allison submitted a report on forms for architects' certificates. A number of forms used by various architects were presented for consideration and a report will be made at the next meeting recommending a standard form of architects' certificates.

Portland Office Building

Architects Schacht & Bergen, Yeon building, Portland, is preparing plans for a six-story class A office building to be erected on the northeast corner of Broadway and Oak streets, Portland, by Messrs. Keller & Boyd, owners of the Benson Hotel. The estimated cost is $1,000,000.

Personal

Messrs. Chas. W. Kreis & Son, architectural designers and builders, have opened an office at 1410 Sunset Boulevard, Los Angeles. Mr. Kreis was formerly with Ley Bros.

Mr. Henry Bacon, noted architect, and designer of the $2,500,000 Lincoln Memorial at Washington, D. C., died Feb. 16 in a New York City hospital.

Architect Henry Barton Watson has opened an office at 634 N. Western avenue, Los Angeles. Mr. Watson was recently director of architecture in the offices of Edwin T. Flaherty, structural engineer, where he assisted in the design of the Forum theater building.

Messrs. Carl Boller, architect, and A. J. Williams, associate, have moved their office to 340-41 Douglas building, Los Angeles.

Architects Paul F. Hartman and R. B. Sisk have formed a partnership and opened offices at 7036 Hollywood boulevard, Los Angeles. Mr. Hartman at one time practiced independently in San Diego, later becoming directing architect for the Frank Meline Company in Los Angeles.

Architect Walter Parker, formerly of San Francisco, and who recently spent a year or two in China, is now associated with Architect John J. Roth, 7060 Hollywood boulevard, Los Angeles.

Architect Joseph C. Longueville announces the opening of offices at 314 Union Bank building, Los Angeles.

Architects Meier & Bounetheau have dissolved partnership. Mr. Bounetheau and Mr. Meier will hereafter practice independently, remaining at 526 Title Insurance building, Los Angeles.

Architect John E. Kunst has moved his office from 820 Higgins building to 511-12 Roberts building, Los Angeles.

Architect F. J. Catton has opened an office at 933 S. Parkview avenue, Los Angeles. Mr. Catton was until recently in charge of the architectural department of the Los Angeles board of education, where he had supervision of all plans for the city schools.

Messrs. Ruggles & McKee, consulting architects and structural engineers of Oakland, have been retained by the Hoyt Heater Company and the Marchant Foundry Company as consulting structural engineers for the new foundry plant to be erected at enth and High streets, Oakland.

Frame Warehouse

Architect Leo J. Devlin of San Francisco has completed plans for a one-story frame warehouse for the Howard Realty Co., to be built on 2nd street, San Francisco.

Apartments and Flat Building

Architects Powers & Ahnden, 460 Montgomery street, San Francisco, have completed plans for a $40,000 apartment house to be erected on the northwest corner of Larkin and Greenwich streets, San Francisco, for Mrs. Annie Convey, also for two residence flats for Mr. Victor L. Puccinnelli, of the Italian American Bank, and Mrs. Louise C. Boronio, both buildings to cost approximately $13,000 each. Contracts have been awarded by the same architects for a four-story concrete office and display building at Brannan and Tenth streets, San Francisco, for the Richmond Sanitary Manufacturing Company.

License Law for Washington, D. C.

The members of the various Coast Chapters have been asked to assist in securing the enactment by Congress of an Architect's License Law for the District of Columbia. The District of Columbia being directly governed by the National Government, the residents of the city of Washington must look to the National Congress for this legislation. Having no personal representation in the Senate and House, they are endeavoring to interest outside architects in securing the passage of the act which has been introduced in the House of Representatives.

Small House Bureau Officers

At the annual meeting of the North Pacific Division of the Architects' Small House Service Bureau, the following officers were elected for the ensuing year:

President—Charles H. Alden, Seattle.

1st Vice-President—Ellis F. Lawrence, Portland.

2nd Vice-President—Rudolph Weaver, University of Idaho.

Secretary—Charles D. James, Portland.

Treasurer—George W. Bullard, Tacoma.

Directors—J. V. Bennes and J. W. DeYoung, Portland.

To Build Additional Stories

Architect August G. Headman, of San Francisco, has completed plans and awarded contracts totaling $80,000 for two additional stories for hotel purposes to the one-story building on University avenue, west of Shattuck, Berkeley, for Mrs. Mabel Roth. Mr. Headman has also completed plans and bids have been taken for a two-story frame club building on Parnassus avenue, San Francisco, for the Delta Sigma Delta Fraternity.

Seattle Apartment Building

Architect Harry Hudson, of Seattle, has completed plans for a $400,000 class A apartment house having twenty apartments to a floor for the Colonial Investment Company of Seattle.

Next President of A. I. A.

Mr. D. Everett Waid, F. A. I. A., of New York City, and for many years treasurer of the American Institute of Architects, who was formerly a member of the profession in Illinois has been nominated by petition for president of the American Institute of Architects by the members of the Chicago and Central Illinois Chapters. With two such prominent candidates for the presidency of the Institute as Mr. Waid of Uew York and Mr. Medary of Philadelphia, the coming convention of the Institute promises to be a most interesting one. In the past the Illinois delegations to the national conventions have been usually fortunate in picking the winner, and if history repeats itself, Mr. Waid will be the next president of the American Institute of Architects.—Monthly Bulletin Illinois Society of Architects.

Architects Move

Mr. Lyman Farwell moved to 444 South Lorraine street, Los Angeles.

Mr. C. H. Alden moved to 236 North Catalina avenue, Los Angeles.

Mr. E. W. Peterson moved to First National Bank building, Fresno.

Mr. B. E. Remmel moved to 966 Warfield avenue, Oakland.

Mr. Joseph C. Longueville moved to 314 Union Bank building, Los Angeles.

Mr. Jens C. Petersen has moved from 301 to 703 Peoples Bank building, Sacramento.

Mr. Samuel B. Birds has moved from the Citizens National Bank building to the Frost building, Los Angeles.

Concrete Warehouses Planned

A group of reinforced concrete warehouses are planned for Mission Rock, San Francisco, construction to be in charge of MacDonald & Kahn, and Engineer F. J. Amweg. The latter is now at work on the plans which call for an expenditure in excess of $5,000,000. The San Francisco Terminals Incorporated, Harry S. Scott, manager, are behind the enterprise.

Designing Science Building

Architects John & Donald B. Parkinson, Title Insurance building, Los Angeles, are preparing plans for a three-story brick science building for the University of Southern California, estimated to cost $175,000.

Piedmont Residence

Plans have been completed by Architects Sidney B. & Noble Newsome for a $30,000 residence for Mrs. H. Hawley Patterson. The house will be built on Sierra avenue, Piedmont.

Money Spent for Construction in 1923

More than $3,998,000,000 was spent for building construction over the country during 1923. Of this amount the architects controlled the planning and designing of approximately $2,876,000,000 worth of construction. During the year about $1,800,000,000 was expended for building material and equipment. Building labor received over $2,200,000,000 in wages during the year. The following table shows how the various amounts were placed. They are necessarily approximate, but they give an amount by which the expenditure for materials can reasonably be judged. The estimate given by architecture, includes the cost of the material and the cost of putting it into place.

Masonry	$73,721,100
Steel Material	83,066,100
Steel Erection	6,749,000
Foundations	34,264,800
Elevators	41,013,900
Carpentry	36,898,000
Ornamental Iron Work	38,418,000
Heating and Ventilating	32,707,300
Fireproofing	20,766,500
Engines and Generators	21,804,800
Plumbing and Drainage	15,574,900
Electric Wiring	19,728,200
Terra Cotta	16,613,200
Glazing, hardware, roofing, painting, lighting, etc.	53,473,800
Architects and Engineers fees	25,958,000
Electrical—lighting Fixtures in residential buildings, including Hotels	34,642,000
Entire Plumbing Equipment	173,213,000
Finished Hardware	17,322,000

It is generally estimated that money spent for construction during 1924 will be divided as follows:

Residential	34%	$1,400,000,000
Public Buildings and Utilities	20%	840,000,000
Business	18%	750,000,000
Educational	15%	630,000,000
Industrial	8%	335,000,000
All other classes	5%	210,000,000
	100%	$4,165,000,000

Approximate expenditure for the various material and equipment for average job.

Masonry	36.1
Carpentry	29.1
Heating	8.7
Painting	6.5
Electric Work	6.0
Plumbing	6.0
Sheet Metal	3.5
Roofing	2.9
Hardware	1.2

The amount of building construction done in the Pacific Coast States during 1923 ran considerably over a half billion dollars and it is estimated that the year 1924 will show an increase of over 20 per cent.

A survey of the various Chambers of Commerce of Pacific Coast cities shows that the registered architects control the planning and erection of about 47 per cent of the total amount of building. The balance is controlled by contractor, builder and designer, etc.

In the rural districts about 75 per cent of the building is planned by contractors, builders and designers. This is mainly on account of lack of fire restrictions, intricate building laws and the general class of cheaper work. In the larger cities this situation is the reverse, architects planning about 80 per cent of the construction on account of the higher type, more costly construction, and because of the many building laws, fire and insurance restrictions of which many contractors are not conversant.

University of Washington Architectural Department

The Architectural Department of the University of Washington is now entering its ninth year. The course given is similar to that in the larger universities of the country, such as Pennsylvania, Massachusetts School of Technology and Cornell.

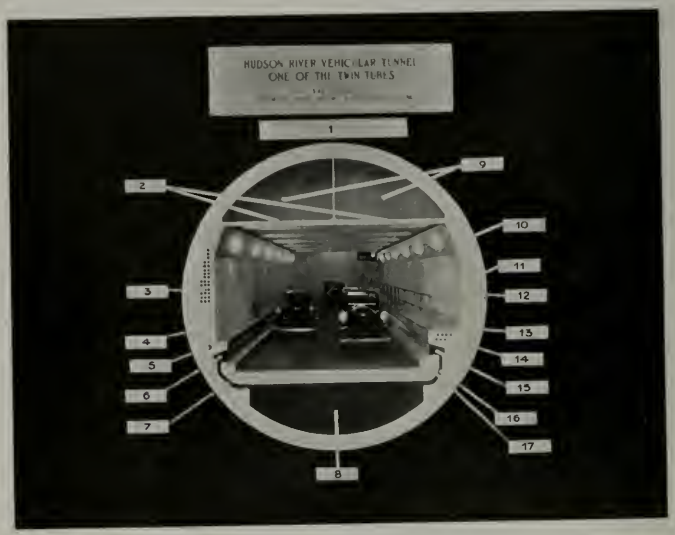
New members recently added to the faculty are Professors Ralph W. Hammett and Arthur T. Herman, the former a graduate of the University of Minnesota, where he acted as instructor and practiced his profession for two years, subsequently receiving his master's degree at Harvard University. The latter obtained his professional training at Carnegie School of Technology, where he was the recipient of high scholastic honors. Both men are giving full time to the department. Mr. Daniel R. Huntington, former city architect of Seattle and practicing architect, is giving part time to instruction.

The aim of the department is to give the student a thorough training and the school is following the system in design work which has been developed in New York by the Beaux Arts Institute of design. Programs are sent from this organization and drawings are returned to New York for judgment, a similar method employed by other departments of architecture and it is an excellent means of giving a comparative estimate of the student's capacity.

The school is now working on a program for the design of the Montlake bridge, Seattle, for which the juniors and seniors are competing and for which a prize of $100 is being offered by Charles H. Bebb, Seattle architect. The purpose is the development of a design that will be in character and harmony with the type of architecture prevailing at the University and one that will give adequate value to the importance of its location.

Carl F. Gould, architect, Seattle, is at the head of the department and has been since its initiation. He is a Harvard graduate and was a student for five years in the Ecole Des Beaux Arts, Paris. He received numerous distinctive awards for his work while there.

With the Engineers



MODEL OF THE HUDSON RIVER VEHICULAR TUNNEL

The cards and the ribbons on the face of the model explain each part of the construction, as follows:

1—Ventilation. Air completely renewed 42 times per hour. Transverse ventilation; no longitudinal movement of air.
2—Exhaust ports every 15 feet throughout.
3—Telephone and telegram cables. Annual income, $100,000.
4—Fire extinguisher.
5—Water supply pipe.
6—Continuous fresh air supply to roadway.
7—Fresh air flues every 15 feet throughout.
8—Fresh air duct running through the entire length of the tunnel.
9—Exhaust air duct running through the entire length of the tunnel.
10—Tunnel segment, weight 3,000 lbs.
11—Weight of complete ring 21.6 tons.
12—Concrete.
13—Sidewalk.
14—Power cables for operation of tunnel.
15—Fresh air expansion chamber.
16—Fresh air flues every fifteen feet throughout.
17—Drain.

Model of Tunnel Made by Engineers to Determine Lighting Needs

ONE of the most ambitious engineering projects attempted in recent years is the building of the Hudson river vehicular tunnel, which will link New York to New Jersey in the most efficient way yet devised. Traffic between the two states is at all times very heavy, and because of New Jersey's popular resorts, week-ends and holidays bring a congestion of automobiles that is far beyond the capacity of the existing ferry services.

There will actually be two tunnels, one for east bound and one for west bound traffic. Each will be twenty-nine feet six inches in diameter, and 9,250 feet long. The roadways will be twenty feet wide and have an overhead clearance of thirteen feet six inches. The rest of the space will be required for the ventilating system, which consists of air ducts at the top and bottom of each tunnel. Fresh air under compression will be forced into the lower duct and from there into the roadway itself through air flues and expansion chambers placed at intervals of fifteen feet along each side of the tunnel. This will force the vitiated air out

through openings, also at fifteen foot intervals, into the top duct whence it will be drawn out by large fans and discharged through the caissons at the ends of the tunnels.

The tunnels are being constructed from both ends, and will meet somewhere in the middle of the river. The calculations on the work are so accurate that when the tunnels meet they will not deviate half an inch. The tunnels are built in ring sections of fourteen cast-iron plates, each plate weighing a ton and a half. The excavating is done in shields, or movable heads, which are pushed forward two and a half feet at a time by thirty hydraulic jacks. As the shield moves forward, the rings are added one by one. When completed the tunnels will have a protective covering of broken stone, and at each entrance there will be a modern pier above the tunnel as it reaches the land, in order to avoid the possibility of a ship running into the tunnel where it comes up.

One of the most difficult problems in connection with building the tunnel has been proper illumination. The Illuminating Engineering Laboratory of the Westinghouse Lamp Company recently became interested in this problem and began a series of experiments to determine the best possible lighting system. In order to study all suitable systems of illumination under approximate operating conditions, an exact model of the tunnel on a scale of one inch to one foot, and ten feet long, was constructed in the Bloomfield plant. Exact replicas of the proposed lighting units were installed in this model tunnel, furnishing an amount of light corresponding accurately to the desired illumination. The model tunnel, pictured above, is complete to the most minute detail, even the brass railing along the walk for pedestrians being provided.

It would seem at first glance that lighting the tunnels would be merely a matter of installing plenty of units, but that is not the case. It is necessary in the first place to eliminate all glare, so the units, one every twenty feet, were encased in metal boxes sunk into the concrete of the tunnel, and diffusing glass used to cover them. Next, the lights had to be so placed as to secure the greatest possible amount of reflected illumination from the walls and ceiling. Third, and most important, it is extremely necessary that all shadows between cars be eliminated in so far as possible, as sharp shadows would cause drivers to misjudge distances, which might result in accidents. As the new tunnel is expected to relieve the traffic congestion on the west side of New York, any accidents or tieups in the tunnel must be rigorously guarded against, and proper illumination will be an important factor in accomplishing this.

Van Duzen River Bridge

The bridge department of the California Highway Commission has completed plans for a bridge over the Van Duzen river near Alton in Humboldt county, and bids for the construction will be opened April 7th, at Sacramento. This bridge is on the famous Redwood highway and replaces an old steel structure over the river.

The new bridge as designed by the commission's engineers will be of reinforced concrete with a total length of 734 feet and a clear roadway width of 21 feet.

It consists of three arch spans of 163 feet in length, of one 30 foot approach span at one end and seven 30 foot approach spans at the other end.

The arch piers and abutments will rest upon a gravel foundation. The trestle spans are of the reinforced concrete pile type.

After considerable study and investigation as to the most economical type of structure for this crossing this design was selected. The arches are of the barrel or single rib type with open spandrels, the superstructure being a solid slab with panel lengths of about 10 feet, supported on columns which rest on the arch rib. The crown section of the arch rib is 14 feet wide and 2 feet thick. At the springing the rib is 3 feet 3 inches thick.

The bridge has been designed for two 15 ton trucks and a uniform load varying from 70 to 130 pounds per square foot, depending upon the amount of road occupied. An impact percentage was added to the live load for all parts of the structure except the piers and abutments. A temperature variation of 35° rise or fall was provided for in the design of the arch rib.

The unit stresses used in the design are those usually employed in such structures, being 16,000 pounds per square inch for steel in tension, 650 pounds per square inch for concrete in flexure, 750 pounds per square inch for concrete in compression and flexure when temperature stresses were considered, etc.

The concrete specified is a 1:2:4 mix for all parts of the structure except the piers and abutments which are of the massive gravity type and in which a 1:3:6 mix of concrete is specified.

The total cost of the structure is estimated to be in the neighborhood of $100,000.

Field of the Contractor

Novel Plan for Financing Home Building

LET the building material men create an instrumentality for selling their commodities to home-builders on the installment plan, is the novel suggestion laid before the recent convention of the Ohio lumber retailers association by Theodore F. Laist, architectural advisor of the National Lumber Manufacturers Association. The suggestion made such a "hit" that a committee was appointed to deal with it and give authority to bring it before other associations with a view to making it a national enterprise.

Mr. Laist in effect proposes a new and seemingly economical way of financing the second mortgage, which, if it should be put into operation, would eliminate a large part of the additional cost that most present deferred-payment plans impose on home-builders who have not enough cash to make up the difference between a first-mortgage amount and the cost of the house and lot. The suggestion was offered to the lumber dealers as a means of increasing their sales, under the title,"Increasing Sales Through Financing Building Projects." The following is a digest of the paper:

"The title of my address may at first glance seem a misnomer for it is not my purpose to consider those minor schemes of merchandising and publicity by which an enterprising dealer may increase his sales, generally at the expense of another competitor. It is the total volume of trade with which we are now concerned, therefore, the problem will be considered in its broadest aspect with the thought of increasing the sum total of sales in the industry. To successfully solve this problem we can do no better than study the underlying fundamentals of selling on term payments, which have been so successfully adopted in some of the other industries, as not only to attract world wide attention but to cause resentment in other lines of trade suffering thereby.

Houses vs. Automobiles

It is seldom that the lumberman will lose an opportunity of calling attention to the funds which he believes are so willingly and so lavishly expended on automobiles and thus diverted from other channels. This fact he attributes to the wonderful merchandising and publicity methods which have been important factors in the phenomenal growth of that industry. The case with which the purchase of an automobile may be financed may be regarded as the most important of all contributing factors. To counteract this and to encourage home building own your own home shows, model houses, and similar exhibitions are staged, the daily papers and periodicals are filled with home building pages containing illustrations of homes. The economy and comfort of home ownership are emphasized all to arouse the latent desire of home ownership, yet the sale of automobiles not only continues to increase numerically but in proportion as the sale of homes diminishes.

"My own observations have led me to believe that the average man and woman are already sold on home ownership, and that if a means were devised by which they could realize their desires the volume of new business would be so enormously increased that it could not be handled.

"Important as are own your home shows, model houses, advertising, and publicity of all kinds, they all sink into insignificance compared with the importance of making it possible for the man with small capital to finance a home without being at the mercy of the loan shark and being stung by some unscrupulous speculative builder.

MAKING THE SECOND MORTGAGE "RESPECTABLE"

"We some times forget lines of merchandising other than that of the automobile in which the total sales volume has increased so enormously within recent years. Had it not been for the deferred payment plan, pianos, phonographs, washing-machines, and other costly instruments or utilitarian appliances for the home would never have found the wide distribution they have, even in the homes of those of the most humble means in which they have come to be regarded as a necessity.

"There was a time when buying on the installment plan was a practice which was not in favor with the thrifty. In fact, to buy on the installment plan was not considered quite respectable. Today it is nothing unusual for men of large means to buy on payments. There was, also, a time not so long ago when it was not considered quite the thing to live in a rented house—a man who could not own his own home was regarded as

falling short of one of the best requisites of good citizenship. In the early days of the installment business which in truth was conducted on a low plane sharp practices and all sorts of trickery were resorted to to catch the unwary and reclaim the goods after large payments had been made.

"There came a time when it was necessary to regulate the practices of the installment furniture houses by law, but the installment practice as practiced by big concerns now is fair and square, merchandising and not a cloak for trickery. Only a small percentage is added for the accomodation and in many cases the article is sold at its cash value and a percentage added for the deferred payments.

"What has been done in installment mortgage buying, and other industries may be accomplished in second mortgage loans as applied to home building. To make the second mortgage "respectable" means opening up a field for the fair minded operator, it means more than that, namely, reducing the risk and making it possible to obtain second mortgage money at a lower cost. Any machinery by which second mortgage money may be made available at low cost will start a new lot of potential home owners.

DISCOUNTING SECOND MORTGAGES

"Since the channels for discounting mortgages-building paper are restricted the amount of financing that can be done by any individual lumber merchandising concern must be limited, furthermore, not to be encouraged as such accommodations add very largely to the cost of merchandising. The speculative builder who accepts second mortgages is placed in the same unfavorable position — generally operating on limited capital he must sacrifice his second mortgage notes to be able to continue in business. His loss in financing must be made up by a correspondingly high per cent in the profits of construction. This makes the building cost unnecessarily high or as frequently happens the construction of the building is skimped.

"Too much emphasis I believe is placed upon the publicity given to automobiles as a factor in diverting sales from homes to automobiles. The fact is that many buy automobiles because of insufficient capital to buy a home. The down payment required on an automobile is seldom enough for a down payment on a home. This is the crux of the home situation.

"Since rents bear direct relationship to building costs they will remain high if the cost of building is high. Therefore, the home owner if he considers the economical aspect will expect the cost of a house to advance parallel to the advance in rents. In other words, in figuring what he can pay for a home he will capitalize the rent that he must pay. Therefore, the cost of a home must not be considered in the abstract and is not nearly as important as the amount of cash required.

"It is incomprehensible that the one industry which provides what is undeniably a necessity finds it so difficult to finance, whereas an automobile and a musical instrument—always an expense —are so easy to finance. A home is not an expense for in most cases the rent would pay the installments necessary to acquire a home. An automobile and a piano may be bought on a comparatively small down payment, notwithstanding that the depreciation is very much greater and the seller resumes a much greater risk. This may be attributed to the large amount involved in a home, in the fluctuation in building costs, and that a building, as it is usually handled, is so loaded up with expense not representing physical property. The usual payment of twenty to twenty-five per cent required by a home builder does not actually represent an investment in physical property. The middle man is the bete noir of the consumer in other lines, but in the building industry there is not only a middle man in the middle but several in the front and several in the rear, each of whom exacts his toll and in many cases a most unreasonable fee for the services rendered.

LACK OF READY CASH

"In a suburban town a group of material men and builders were discussing the reason for inactivity in home building and decided to investigate. It was found that many non-residents had purchased building lots expecting to build homes. Many of these lots had been paid for in full. The owners were canvassed and the reason discovered for not building. In nearly every case it was found that the owners were deterred from building because of the lack of ready cash. Many stated that after figuring for several years they had abandoned all hope for the present and admitted that they had invested their cash in an automobile, but stated that before doing so they had earnestly endeavored to secure a home.

"Five hundred dollars in cash will go a long way towards securing the ownership of an automobile but under present conditions is not sufficient for the first down payment on a home.

"Many had planned to make up the deficiency by procuring a second mortgage but had found the rates so exorbitant and the business in the hands of undesirables that they abandoned the project. They, therefore, seemed to have gravitated into the class of permanent renters instead of home owners, not from choice but because of economic conditions. In such cases, the lack of interest in homes can hardly be attributed to the automobile and its publicity.

" A similar canvass was made of those living in rented quarters in the community in question and the surrounding territory. In almost every case the condition was found parallel, although perhaps a large percentage had never considered buying a home very seriously.

"And now we come to the financing of the second mortgage, the most important of the methods by which the building of small homes may be stimulated. The financing of the first mortgage need not be stressed at this time. Large financial institutions, building and loan associations, and insurance companies are well able to handle the needs of the home builder in this respect. Let me in passing bring out this thought, that even though a first mortgage may be obtained for a very large percentage of the cost of a home, say seventy five or eighty per cent—which is sometimes possible to obtain from a private lender—it is economical to finance with a first mortgage for fifty or sixty per cent at a low rate of interest and having a long term of years to run, and then borrow the balance on a second mortgage for a short time, then to finance the whole amount on a first mortgage.

"Associations of material men organized for financing second mortgages are not new. The experiment is not untried and particularly within the last few years small groups of lumbermen, real estate men, and contractors have been instrumental in successfully promoting such loan companies. In most instances, however, their business has been primarily that of discounting builders' second mortgages on homes already erected. Such institutions serve a valuable purpose by enabling the builder to conduct his business on a larger scale than otherwise his capital would permit but the ultimate consumer, the home buyer, still pays the high price for his mortgage. Whether or not the builder is able to discount his note little affects the cost of the second loan. Such companies finance the builder more than they do the home owner.

"I wish to bring to your attention a plan which appeals to me as being the best for the purpose, viz, that of stimulating small home building by reducing cost of financing to an absolute minimum, at the same time requiring a minimum cash payment on the part of the home owner.

SECOND MORTGAGE LOAN COMPANY

"A group of lumbermen, material men, general contractors, subcontractors representing the plumbing, steamfitting painting, and electrical trades, etc., get together and organize a second mortgage loan company in which each one subscribes to the capital stock. This company will function primarily by assisting those desiring to build homes by financing the second mortgage; secondary functions are providing plan service if necessary, financing the first mortgage if desired, and providing contractors.

"When an individual applies to the company for a loan those members of the group interested bid in the usual manner on the plans for the work. When the contract is awarded it is awarded in the usual way on the usual conditions but with the one difference, viz, that instead of exacting full cash payment from the owner each contractor or sub-contractor agrees to take in second mortgage notes his percentage of whatever money may be needed to bridge the gap between the first mortgage and the money the owner has on hand. These notes he accepts at par. Ordinarily he would have to peddle the notes and sell them at a large discount, the price being fixed accordingly. In this plan he endorses the notes, turns them into the loan company and receives in cash the face value of the notes less a small fee.

"The loan company, therefore, has collateral with the building as security, paper with the name of the owner and the name of the sub-contractor as additional security. Whenever the loan company needs funds it may borrow on these notes as collateral through banking channels and the loan company will guarantee these loans. I have been told by officials of large banking institutions in Chicago that they would gladly accept such paper with a guarantee of the loan company and loan by far a larger per cent than they would ordinarily on second mortgage notes, which in fact most banks will not take at any price. The reason for which is obvious because the paper of this loan company is more secure. In the first place, there is the guarantee of the loan company but above that is the fact that the second mortgage actually represents physical property and is not merely floated for the purpose of paying fees, percentages for financing, etc.

"I wonder how many home owners buying from speculative builders or others on small payments realize that after they have skimped and scraped to make a payment of perhaps twenty five per cent, that actually they have paid for no physical property. The payment made has been absorbed by fees of all kinds, discounts on notes, general expense, insurance against risks, etc., in other words, they have not paid for a single foot of lumber, a single brick, and by that I mean they have not paid for the material itself, nor the labor to place it, nor any direct overhead connected with the installation.

"Under this plan there is no necessity for exacting extortionate interest on fees.

There certainly is none on the part of the first contractor, and there is very little on the part of the guaranteeing company. Such loan companies should be local or neighborhood affairs, conducted similar to the small building and loan association.

"Now in conclusion, whether the last mentioned plan is a good one or whether other plans that have been tried offer better solutions I admit I am unable to decide, but I am so firmly convinced of the importance of financing through the channel of the second mortgage that I believe the time is ripe for an association of this kind to take some positive step in advance. I would like to see this convention take the initiative and appoint a committee to thoroughly study the problems of financing second mortgages. Furthermore, the committee should take it upon itself to see that similar action is taken at other conventions of lumbermen and builders and then arrange to meet in conference to prepare definite recommendations for a working plan. When this is accomplished any similar group may, with little expense and no difficulty, organize a second mortgage loan company.

"Out of this conference should come eventually the organization of a national institute for the purpose of standardizing practices in this field, providing field men to assist in the establishing of such companies and to exercise supervision over the individual institutions who voluntarily submit themselves to such supervision. It is not unreasonable to suppose that within a short time securities of such affiliated companies, stamped with the seal of the national institute, will be accepted as gilt edge investments. This, of course, will take some time but we do well to look into the future. Furthermore, a certificate from this organization will be a guarantee of good construction—in itself a valuable asset.

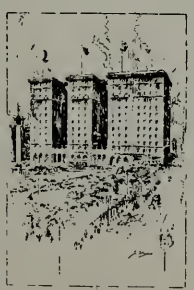
"Just now, there is plenty of business but we must remember that after the immediate shortage in homes has been relieved the inevitable slump will come. It is then that a new crop of home investors of small capital may be made available. There is within reach an army of potential home buyers. It is for you to say the word that will bring them into life."

How Do You Measure Bulk Materials?

The "practical" man, long experienced in concrete work, has a tendency to think disparagingly of theoretical and too refined methods in mixing concrete. Without doubt, theory can be carried too far. The present-day tendency is toward more careful control of concrete mixing, and there is no question but that a little extra care will be well repaid. Take, for example, the matter of measuring the various ingredients in a batch of concrete. Most of the measuring is done by wheelbarrows, and yet very rarely does the man in charge know the capacity of the wheelbarrows he is using.

The Contractors' and Engineers' Monthly says that in a recent case, a concreting foreman stated that he was using a good, rich mix—1:2:4. On further questioning, it developed that he was using one bag of cement to one wheelbarrow of sand and two wheelbarrows of stone. The barrows were of the deep, steel-body type, and by actual measurement held three cubic feet. Thus, his mix was actually 1:3:6—a very much leaner mixture than he should have been using.

If measuring must be done by wheelbarrows, their capacity should be measured and a mark made to which they



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MANAGEMENT
THOS. J. COLEMAN

should be filled. A convenient way of doing this is to use the familiar bottomless measuring box, a table for which is given below:

Dimensions for Bottomless Measuring Boxes of Various Capacities

Capacity in Cu. Ft.	Inside Measure—Length Inches	Breadth Inches	Height Inches
1 cu. ft.	12	12	12
1¼ cu. ft.	15	15	9⅝
1½ cu. ft.	15	15	11½
1¾ cu. ft.	15	15	13½
2 cu. ft.	18	18	10⅝
2¼ cu. ft.	18	18	12
2½ cu. ft.	18	18	13⅜
2¾ cu. ft.	18	18	14⅝
3 cu. ft.	18	18	16

Surety Bonds Favored

"The American Association of State Highway Officials has appointed a committee to investigate and report on the surety and bond situation," says the Monthly Letter of the Contractors Association of Northern California, composed entirely of highway and engineering contractors. "This committee held its first hearing at New Orleans during the convention of the state officials in December, but no definite action was taken. The present rate of 1½ per cent can be justified only because of the losses sustained, and it is the aim of the committee to analyze and report on the reasons for such heavy losses. The committee was also instructed to report on the possible alternative of accepting personal sureties.

"The committee in session at New Orleans brought out some very interesting facts in regard to where and how these losses were sustained by the surety companies. It appears from the report brought back from the convention that the losses are largely sustained in the eastern half of the United States and that they are comparatively light in the Pacific states zone. This would indicate that the rate to be established on surety bonds should be established by zones, and that those zones with the minimum loss should be given a preferred rating.

"The Contractors Association of Northern California is in favor of the surety bond as opposed to all other forms of security, for several reasons, chief among which is the fact that contractors employing negotiable collateral would be required to purchase securities probably bearing a low rate of interest and the differential involved between the income derived from the low rate bond and the loans which the contractor would be required to negotiate for the performance of his work is so great that it must reflect itself in a higher cost of the work performed. This differential, in all probability, would amount to more than the premium on the surety bond for the work involved.

"We must not forget that to require contractors to post negotiable collateral may prove such a hardship to many reputable and reliable constructors, whose capital may be absorbed in many jobs, that thereby they might be eliminated from competitive bidding. It would follow then that contracting might become a problem of financing rathern than the ability of the contractor to perform."

Checking Building Errors

If the most scrupulous care were always observed when quoting figures much trouble would be avoided. But figures are dangerous things for the heedless to trifle with and much more dangerous for the man who always considers them as being based on fact. The Portland "Oregonian" makes timely and appropriate comment on the misleading use of figures under the caption "Cost of Building a House," as follows:

"An example of the misleading use of figures is found in the erroneous quotation of a bulletin from Dr. John M. Gries on the cost of building. One newspaper said that 'atfer a careful survey of building conditions all over the United States,' he found that the labor cost in a $5000 house was only 26 per cent, and from this some papers drew the inference that a large advance in wages would affect the total only slightly and they took for granted that all of the remaining 4 per cent represented material.

"The survey did not relate to a merely typical $5000 house, but to 'a certain house' which cost $10,500, and the division of cost was: Labor, 26 per cent; materials, 29.3 per cent; land, 19 per cent; contractor, 12.6 per cent; financing, 6.7 per cent; architect and real estate fees, 6.4 per cent.

"All of these expenditures are necessary to a well built house, if, as is usually the case, it is paid for partly with borrowed money. Then even a 50 per cent advance in wages would affect directly only its 26 per cent of the total, and that is true also of cost of material.

"But we should go as far astray if we did not recognize that an advance in these items indirectly raises the others. The builder calculates on a percentage of the contract price as his profit, and if that be raised, his profit is larger. The architect is paid a percentage fee, which grows with the cost of the house. More money being needed, financing costs more and even if no borrowed money is used, the owner should charge to the house interest on its cost from the beginning of construction until the house is ready for occupancy, and the higher the cost the more interest will be chargeable.

What white pigment is to the Painter

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The adaptability of this material to different types of architecture, different moods of the individual architect, makes it as real a medium for artistic expression as the pigments on a Painter's palette—a fact which should not be overlooked when considering more utilitarian qualities of permanence and fire-safeness of ATLAS White.

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When the range of commodity and labor prices is high, the land-owner will, if practicable, mark up the price of the lot, and up will go the items for land and real estate fees.

"In the cost of building as in that of anything, the price of one commodity reacts on that of another, and it is as grave an error to assume that an advance in labor or material affects either of those items alone as it is to attribute to material all that is not labor."

Some California Cost Figures

A compilation of the present average building costs in Southern California has just been completed by the valuation committee of the local chapter of the Associated General Contractors of America. The information will be used by the County Assessor as an aid in determining the correct valuation of buildings and will doubtless be sure of use to banking institutions' mortgage and loan departments in the appraisal of buildings. The following report was made:

Class A steel frame buildings—Cost per cubic foot; office buildings, 53 cents; hotels, 58 cents; lofts, 28 cents; warehouses, 25 cents.

Class A reinforced concrete buildings—Cost per cubic foot; office buildings, 50 cents; hotels, 55 cents; lofts, 25 cents; warehouses, 20 cents.

Class C brick buildings—Cost per cubic foot; stores or theatres on ground, rooms, apartments, etc. above, 33 cents; apartments, 38 cents; lofts, 20 cents; warehouses, 15 cents; one-story garages, per square foot, $1.75; one-story stores, per square foot, $2.25.

Frame buildings — Cost per square foot; California houses, good, $3.00; medium, $2.50; cheap, $1.75. Bungalows, special $5.00 to $6.00; good, $3.60; medium, $3.00; cheap, $2.50. Bungalows, out of town (no restrictions), good $3.75; medium, $2.75; cheap, $2.00. Residences, two-story, good, $6.00 to $8.00; medium, $4.50; cheap, $3.00. Out-buildings, good, $2.00 to $2.50; medium, $1.70; cheap, $1.00. Corrugated iron buildings, all kinds, approximately, $1.00.

The valuation committee is composed of Messrs. J. C. Bannister, P. M. Jones and Paul B. Davidson.

State Architect Honored

Mr. George B. McDougall, president of the Sacramento Y. M. C. A. and state architect, was elected president of the California State Y. M. C. A. organization for 1924 at the forty-third annual joint session of the convention and of the Northern California Older Boys' Conference, held last month in Fresno.

Mr. H. B. Douglas, architect, has moved from Paso Robles to Greenfield, Monterey county.

Brick Delegates Like California

If economic conditions had permitted, there would now be some 400 more brick plants in California as a result of the Sixth annual convention of the Common Brick Manufacturers' Association of America held in Los Angeles. According to the expressions of pleasure made by visiting delegates and their families, all would have chosen to remain permanently in California. Of the 400 brick manufacturers from all over the country who came to California to attend this convention, seventy cancelled their return reservations and will spend the balance of the winter in California.

This was the first time the Association had ever held its national convention west of Kansas City. Brick makers from Canada and twenty-nine states of the Union came in two special trains of ten coaches each, stopping first in Sacramento, then San Francisco and the Bay cities before proceeding to the convention city. More than 400 delegates, many with their wives and families, came in the caravan. Brick-making machinery manufacturers, architects and others connected with the industry accompanied the party to attend the session.

Los Angeles Architectural Exhibit

The annual architectural exhibit under the auspices of Southern California Chapter, American Institute of Architects, in Exposition Park, Los Angeles, opened February 7th and at its close the collection will be sent to San Francisco, Seattle, Portland and other Coast cities.

The major part of the subjects are photographs of single dwellings recently built in the west. With the growth in residential building, it is assured that such a popular presentation will result in a stimulus for finer architectural design in home building.

The members of the Southern California Chapter of the Institute have contributed generously to the collection, in which is found a great variety of architectural types, as well as houses of various sizes and for various uses. Combined with the work of Los Angeles architects will be found exhibits from other Chapters in the west. The Utah Chapter of the American Institute of Architects has taken advantage of the exhibition and has sent a number of photographs which may be compared with interest to the southern California work.

Northbrae Residence

Miss Julia Morgan of San Francisco, has completed plans for a $25,000 house in Northbrae, Berkeley, for Mr. Paul Phelan. There will be fifteen rooms.

The Shearson Residence, West Palm Beach, Florida. Mr. Addison Mizner, Architect. Mr. Cooper C. Lightbaum, Contractor. Medusa Products furnished by The Dade Lumber Company.

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Company Gives Roofing Material Ten Years Test Before Marketing

By W. H. LOWE

HOW thoroughly the modern industrial concern analyzes its products and their various improvements before releasing them to the commercial world is exemplified in the case of The Paraffine Companies, Inc. that tested in a practical way a surfacing improvement on its material for ten years before marketing.

Before describing how the tests were made it is worthy of note that The Paraffine Companies, Inc. is the originator of asphalt prepared roofing. When the company was organized forty years ago the second product it put on the market was a roofing paper treated with "P and B" paint, famed for its durable qualities.

Prior to September 3, 1921—when the ten year test ended—all roofing of this type required repainting about every three years. Officials of the company were certain that a better roofing was not being made than the Malthoid, but were equally certain that the gamut of improvements on it had not been run.

So the company's chemists were called upon to solve the problem. Special surfacing machinery was installed in The Paraffine plants and Pabco roofs were treated with this special surfacing. Test runs were instituted for a period of ten years. In three years it was discovered that the specially-treated roofing needed no paint. This was encouraging and the tests continued. Up to this time all roofing of this type needed revivification by means of paint.

In 1915—five years after the tests began—the roofing with the special surface gave tangible evidence that it was actually improving with age. Now the tests simmered down to a race with time. The following year passed and the seventh did likewise.

Still the new type of roofing "stood up." In 1921 it had reached its tenth year without appreciable deterioration.

The Paraffine Companies, Inc. then realized that its tests had succeeded. Its special surfacing was to be the factor in revolutionizing its established methods of making roofs.

The thoroughness of the tests the firm made on the roofing is but in line with the policy of the concern to make its products better. It spends thousands of dollars annually for this sole purpose, and its object seems to be an unselfish one.

I have often heard the directors of this concern state that The Paraffine Companies, Inc. takes more pride in the realization that its products are giving unusual satisfaction than the mere monetary return that accrues from sales alone.

Has Fixed Sales Policy

There has been much discussion among manufacturers of building material and equipment anent their sales policy in approaching architects, owners and contractors in selling them materials. Some have not approached the owner for fear of incurring the displeasure of the architects, while other manufacturers direct their entire sales efforts toward the owner.

The Bonded Floors Company, national manufacturers, engineers and contractors of linoleum, cork and rubber tile flooring, have worked out a sales policy that undoubtedly will interest architects, builders and the general building public. It is as follows:

1. It is our desire to cooperate with architects, general contractors and owners in the sale of our products, taking into account the trade conditions existing in our field of operations.
2. Resilient flooring materials are often sold as floor coverings by companies that deal exclusively with owners, so to adapt our business to such competition we must also have more to do with owners than is the case with companies manufacturing other strictly architectural products.
3. A resilient floor contract, like contracts for fixtures and interior decoration, is preferably not included in the general contract because the choice of color and final details as to arrangement of partitions are not usually settled at the time the general contract is placed. It is therefore usually made a separate contract with the owner under specifications drawn by the architect.
4. Sometimes conditions as to flooring are so thoroughly settled that complete drawings and choice of colors and specifications can be prepared in time to include them in the general contract.
5. In all cases where an architect is retained and the resilient floor is to be purchased upon architect's specification direct by the owner, Bonded Floors Co., Inc. and its authorized agents will:
   (a) Give no prices to owners, but will feel free to go to owners to acquaint them as to the field of application of our materials, the responsibility of this company, and as to successful installations we have made.
   (b) Will quote prices and submit formal proposals and contracts only to architects.
6. In all cases where an architect is retained and the resilient floor is to be purchased upon architect's specification as a part of the general contract we will:
   (a) Give no prices to architects or owners but will discuss with them freely the application of our materials, etc.
   (b) We will quote prices and submit formal proposals, only to general contractors who are bidding on the general contract.

Berkeley Rebuilding Fast

Building which represents an expenditure of $1,141,000 is now under way in the burned area of Berkeley. According to figures from the office of the city building inspector, 68 structures are either in progress or have been completed since the fire of September 17. Most of the buildings are now in course of construction. Of the 68 buildings, 29 are apartments or flats having a total valuation of $623,000. The 39 remaining dwellings average $13,000 in valuation making a combined expenditure of $528,000.

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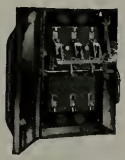

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Monolith Waterproof Cement Meets Popular Approval

Twenty five years ago it was no uncommon thing for an engineer or architect to specify "Star Stettin," "Largerdorfer" or some other brand of foreign Portland cement, steadfastly refusing to recognize any of the few American brands manufactured at that time.

The "tramps" of the sea could be observed at any port, discharging large quantities of foreign cement packed in wooden barrels, which they had taken on as ballast, considering themselves fortunate in being able to secure a stabilizer so easy to handle. Usually there was no freight charge for such transportation.

The American cement manufacturer, struggling with as crude equipment as his foreign competitor and higher labor costs, set about to devise improved machinery for making and handling his product from the quarry and through the mill, knowing his very existence depended upon quantity as well as quality production.

The present day cement mill with its gigantic crushers, conveyors, grinders, and rotary kilns bears no more resemblance to the cement mill of twenty years ago than a 1904 model automobile compares with the 1924 creation.

In the modern cement mill nothing is left to chance. Even before the quarry foreman gets his crew assembled, the chemists have sampled the rock to determine its fitness—samples are taken from the clay beds—other ingredients are sought out, put through miniature kilns, ground and a finished cement is produced —this routine goes on constantly at every plant, in order that the consumer may get what he pays for; that the contents of each sack may measure up to the exacting standard adopted by American cement manufacturers.

Notwithstanding the safeguards devised to perpetuate quality and the perfection of cement machinery, there was no improvement in the cement itself, until a chemical engineer, Hans M. Olson, succeeded after fourteen years of experimenting with practically every known substance, in producing a Portland cement which diffuses to a greater extent in mixing, produces about twice as much collodial substance which results in increased plasticity or fatness of the mortar making possible the placing of concrete without segregation of the mass concrete, thereby insuring a thoroughly mixed aggregate reaching the forms, a condition most vital to good concrete construction.

Waterproof concrete, so long sought by those engaged in the manufacture and use of cement, became, through Mr. Olson's achievement, at last, a reality. By the use of cement made under Olson

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1924 --- A Brick Year

YOU will find evidence in every community of the great awakening to the many advantages and economies of brick. Architects everywhere are today turning to brick for residence construction. Get all the facts about brick. Send today for "Distinctive Brick Homes"—a 60-page manual of home architecture containing photos and floor plans of more than 50 modern California Brick Homes. Use the coupon below.

California Common Brick Manufacturers Association
342 Douglas Bldg., Los Angeles

patents, the architect, contractor and owner could be certain that moisture would not penetrate the concrete. An immensely important problem was solved.

An enterprising group of practical men, long engaged in the manufacture of cement immediately recognized the importance of this forward step in cement improvement, took over the Olson patents and launched the product under the name of Monolith Plastic Waterproof Portland cement.

The Monolith mill, located at Monolith, California in the Tehachapi range, on the main lines of the Southern Pacific and Santa Fe railroads, became the sole manufacturer. So immediately successful was the sale of the waterproof plastic grade that the Monolith Portland Cement Company has been compelled from time to time to enlarge its plant, having now ready to be installed, sufficient machinery to bring the mill up to a capacity of 18,000 sacks a day. Monolith is carried in stock by most dealers on the Pacific Coast.

Have New Line of Building Materials

Messrs. Cheek and Gillis of San Francisco have recently been appointed Pacific Coast agents for Knapp Brothers Manufacturing Company, Wright Rubber Products Company, Munson Manufacturing Company and Zenitherm Company, Inc.

Knapp Brothers Manufacturing Company, manufacture a complete line of interior trim, such as metal bases, door and window casings, chair rail, metal picture moulds and bull nose corner beads.

Wright Rubber Products Company, manufacture rubber floor tile. This tile is made in four grades and a large assortment of colors, including marble effects. A special feature of the Wright tile is that it comes with a patent lap and forms an interlocking arrangement which absolutely prevents any chance of the tile leaving the floor. The Wright line comprises tile, bases and wainscoting material, mouldings and stair treads with nosing attached.

Munson Manufacturing Company, manufacture a patent floor anchor for fastening sleepers to the concrete where wood floors are to be applied over the concrete. It is known as the Grip-Tite floor anchor. It provides an economical means of doing this work and does away with the necessity of embedding the sleepers in the concrete.

Zenitherm is a universal building material for both outside and inside construction. It closely resembles travetine in appearance and comes in sheets of maximum dimensions of 17½x47½".

Catalogs and full descriptions of these materials will be sent on application to Messrs. Cheek & Gillis, 625 Call building, San Francisco.

State Capitol Building, Salem, Oregon

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BAY STATE Brick and Cement Coating gives to stucco and cement a remarkable beauty that is long lasting and absolutely weather-proof. Stucco is porous, so is concrete—moisture will seep through them. But the hardest rains cannot get through a cement or stucco wall finished with a Bay State Brick and Cement Coating. This master finish creeps into the pores, hardens and permanently seals them.

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San Francisco, Cal.

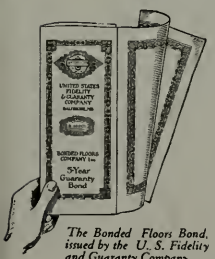
In this cheerful sun parlor, the touch of color in the floor has added considerably to the refreshing quality of the streaming sunshine.

Distinctive Floors in the Home

Much of the charm and individuality of the sun parlor illustrated above has been achieved through the floor. Strikingly decorative, this floor of Gold-Seal Treadlite Tile plays a definite and well-planned role in the room's decoration.

In this and other Bonded Floors, such as Gold-Seal Battleship Linoleum, Gold-Seal Rubber Tile, and Gold-Seal Cork Tile, the architect has at his disposal an interesting variety of colorings and designs, which makes for an unusual latitude of decorative treatment.

But Bonded Floors have more than colorful beauty to recommend them. For they are resilient floors and thus conduce to the quiet and under-foot comfort so desirable in the home environment.



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A Philippine hardwood that lends itself to practically any colored stain. LAMAO finishes a beautiful walnut or Oak and when finished as Mahogany, it is hard to tell it from Honduras Mahogany.

The additional expense of using LAMAO trim in the average home instead of softwoods is very nominal and it materially increases the value of the home.

Write for comparative costs and samples.

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Present Cost of Building Materials

THESE quotations are based on reliable information furnished by the San Francisco material houses. Date of quotations, March, 1924. All prices San Francisco or Oakland. For country work add freight and cartage to prices given.

Bond—1½% amount of contract.

Brickwork—
Common, $35.00 per 1000 laid.
Face, $75.00 per 1000 laid.
Enamel, $150.00 per 1000 laid.
Common, f. o. b. cars, $15.50, plus cartage.
Face, f. o. b. cars. $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f. o. b. cars in carload lots.)

12x12x3 in.	$ 96.00 per M
12x12x4 in.	108.00 per M
12x12x6 in.	156.00 per M
12x12x8 in.	243.75 per M

Hod carriers, $6.50 per day.
Bricklayers, $10.00 per day.
Lime—$2.25 per bbl.; carload, $2.15

HOLLOW BUILDING TILE f. o. b. cars in carload lots.)

8x11½x5½	$108.00
6x11½x5½	85.00

Composition Floors—22c to 50c per sq. ft. In large quantities, 22c per sq. ft.

Composition Stucco—$1.90 to $2.10 per sq. yard (applied).

Concrete Work (material at San Francisco bunkers)—

No. 3 rock	$2.15 per yd.
No. 4 rock	2.30 per yd.
Niles pea gravel	3.50 per yd.
Niles gravel	2.35 per yd.
Niles top gravel	2.75 per yd.
City gravel	2.15 per yd.
River sand	1.75 per yd.
Delivered bank sand	1.00 per yd.

SAND
Del Monte.....$1.25 to $1.50 per ton
Fan Shell Beach (Car lots, f. o. b. Lake Majella).... $2.50 to $3.00 per ton
Swedish cement.....$2.68 per bbl.
Belgian cement..... 2.65 per bbl.
Cement (f. o. b. cars)..... 3.01 per bbl.
Rebate for sacks, 10c each.
Atlas "White".....$ 9.75 per bbl.
Medusa "White" .....$ 9.95 per bbl.
Forms, Labors average....$27.00 per M
Wage—
Concrete workers.....$5.00 per day
Cement finishers ..... 8.50 per day
Laborers ..... 5.00 per day

Dampproofing—
Two-coat work, 25c per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $5.00 per square.
Hot coating work, $2.00 per square.
Wage—Roofers, $8.00 per day.

Electric Wiring—$5.50 to $10.00 per outlet for conduit work (including switches).
Knob and tube average $3.00 to $5.50 per outlet.
Wage—Electricians, $8.00 per day.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in 4-story bldg., $3250; direct automatic, about $3000.

Excavation—
$1.25 per yard, if sand. Teams, $10.00 per day. Trucks, $21 to $27.50 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $105.00 per balcony.

Glass—(Consult with manufacturers.)
21 ounce, 16c per square foot.
Plate, $1.10 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 30c per sq. ft.
Obscure glass, 28c per square foot.
Note—Add extra for setting.
Wage—Glaziers, $8.00 per day.

Heating—
Average, $2.25 per sq. ft. of radiation, according to conditions.
Wage—Steamfitters, $9.00 per day.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.
Wage—Iron workers, bridge and structural, $9.00 per day.
Architectural iron workers, $7.00 per day.

Lumber—(Prices delivered to bldg. site)
Common, $37.00 per M (average).
Com'n O.P. (select, avrg....$40.00 per M
Flooring—

1 x 6 No. 3—Form lumber	$24.00 per M
1 x 4 No. 1 flooring	65.00 per M
1 x 4 No. 2 flooring	60.00 per M
1 x 4 No. 3 flooring	48.00 per M
1 x 6 No. 2 and better flooring	60.00 per M
1¼ x 4 and 6 No. 2 flooring	64.00 per M

Slash grain—

1 x 4 No. 2 flooring	52.00 per M
1 x 4 No. 3 flooring	48.00 per M

No. 1 common run to

T. & G.	$36.00 per 1000
Lath	6.00 per 1000

Shingles—(Add cartage to prices quoted)

Redwood, No. 1	$1.10 per bdle.
Redwood, No. 2	.90 per bdle.
Red Cedar	1.25 per bdle.

Building Paper—

1 ply per 1000 ft. roll	$6.25
2 ply per 1000 ft. roll	9.60
3 ply per 1000 ft. roll	14.55
Sash cord com. No. 7	1.25 per 100 ft.
Sash cord com. No. 8	1.40 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.30 per 100 ft.
Sash weights cast iron	60.00 Ton
Nails, $4.25 base.	

Hardwood Flooring—

⅝x3¼" T & G Maple			$137 M ft.
1¼x2¼" T & G Maple			140 M ft.
⅞x3½ Sq. Edge Maple			116 M ft.
	¾x2¼" T&G	⅜x2" T&G	½x2" Sq. Ed
Clr. Qtd. Oak	$179 M	$124.00 M	$156 M
Sel. Qtd. Oak	135 M	92.50 M	114 M
Clr. Pla. Oak	140 M	92.50 M	114 M
Sel. Pla. Oak	124 M	80.00 M	97 M
Clear Maple	135 M	81.00 M	
Orion	140 M	100.00 M	100 M
Bagac	130 M	90.00 M	90 M
Laying and Finishing	16c ft.	15c ft.	13c ft.

N. B.—Materials and labor are plentiful at present time, with tendency to lower prices.

Wage—Floor layers $9.35 per day.

Millwork—

C. P., $100 and up per 1000. R. W., $120 and up per 1000.
Double hung box window frames, average) with trim, $8.00 and up, each.
Doors, including trim (single panel), $10.50 and up, each.
Doors, including trim (five panel), $8.50 each.
Screen doors, $3.50 each.
Cases for kitchen pantries seven feet high, per lineal foot, $7.50 each.
Dining room cases, $8.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average) $16 per m.
For smaller work, average, $28.00 to $35.00 per 1000.
Wage—Carpenters, $8.00 per day.
Laborers—$5.00 per day.

Marble—(Not set), add 40c to 60c per ft. for setting.

Columbia	$1.60 sq. ft.
Alaska	1.60 sq. ft.
San Saba	3.15 sq. ft.
Tennessee	2.00 sq. ft.
Verde Antique	3.75 sq. ft.
Westfield Green	3.50 sq. ft.

Wages—Marble setters, $8.00 per day; helpers, $5.50 per day. Marble polishers and finishers, $6.00 per day.

Painting—

Two-coat work	30c per yard
Three-coat work	45c per yard
Whitewashing	5c per yard
Cold water painting	9c per yard

Turpentine, $1.20 per gal. in cases and $1.05 per gal. in tanks.
Raw Linseed oil....$1.05 per gal. in bbls.
Boiled Linseed Oil.. 1.10 per gal. in bbls.
Pioneer white and red lead, 11¾c lb. in one-ton purchases; 12c lb. for less than 500 lbs.
Wage—Painters, $8.00 per day.
Note — Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.50 lineal foot
8-inch	1.75 lineal foot
10-inch	2.25 lineal foot
12-inch	3.00 lineal foot

Pipe Casings—14" (average), $7.50 each.

Plastering—(Including Lathing)
Interior, on wood lath, 65c per yard.
Interior, on metal lath, $1.25 per yard.
Exterior, on brick or concrete, $1.30 per yard.
Portland White, $1.75.
Interior on brick or terra cotta, 60c to 70c per yard.
Exterior, on metal lath, $1.85 to $2.25 per yard.
Wood lath, $7.00 a yard per 1000.
Metal studding, $1.25 to $1.50 per yard.
Suspended ceiling and walls (metal furring, lathing and plastering), $2.00 per yard.
Galv. metal lath, 33c and up per yard, according to gauge and weight.
Lime, f. o. b. S. F. warehouse, $2.50 bbl.
Lime, bulk, per ton of 2000 lbs., $19.50
Hardwall plaster, $15.40 per ton, f. o. b. warehouse. (Rebate on sacks, 15c.)
Finishing plaster (carload lots), $19.00.
Hydrate of lime, $19.50 per ton, f. o. b. warehouse.
Wage—Plasterers, $10.00 per day.
Lathers, $8.00 per day.
Hod carriers, $7.00 per day.

Plumbing—
From $70.00 per fixture up, according to grade, quantity and runs.
Wage—Plumbers, $9.00 per day.

Reinforcing Steel—
Base price for car load lots, $3.80 per 100 lbs., f. o. b. cars on docks.
Average cost to install, $25 per ton.
Wage—Housesmiths, $8.00 per day.

Roofing—
Five-ply tar and gravel, $6.00 per square for 30 squares or over.
Less than 30 squares, $6.25 per square.
Tile, $35.00 to $50.00 per square.
Redwood Shingles, $12.00 per square in place.
Cedar Shingles, $12.00 per sq. in place.
Reinf'd Pabco, 7 yr. roof, $7.50 per sq.
Reinf'd Pabco, 10 yr. roof, $10.25 per sq.
Reinf'd Pabco, 20 yr. roof, $13.50 per sq.
Recoat, with Gravel, $3.00 per square.
Wage—Roofers, $8.00 per day.

Sheet Metal—
Windows—Metal, $2.00 a square foot.
Fire doors, (average), including hardware, $2.30 per sq. ft.

Skylights—
Copper,$1.25 a square foot (not glazed)
Galvanized iron, 35c a square foot (not glazed).
Wage—Sheet metal workers, $8.50 per day.

Stone—
Granite, average $7.50 sq. ft. in place.
Sandstone, average Blue, $4.75; Bosic, $2.80 sq. ft. in place.
Indiana Limestone, $3.00 per sq. ft. in place.
Wage—Stone cutters, $8.00 per day.
Stone setters, $8.50 per day.

Store Fronts—
Copper sash bars for store fronts, corner, center and around sides, will average 85c per lin. ft.
Note—Consult with agents.

Structural Steel—$112 per ton (erected).
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.
Cost of steel for average building (erected), $108 per ton.

Steel Sash—
All makes, from S. F. stock, 26c to 34c per sq. ft.
All makes, plant shipment, 28c to 34c per sq. ft.
(Includes mullions and hardware.)

Tile—White glazed, 80c per foot.
White floor, 80c per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $1.00 per sq. ft. laid.
Wage—Tilesetters, $8.50 per day.

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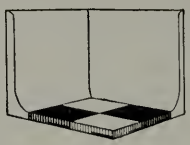

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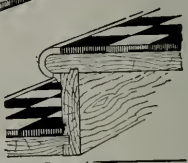

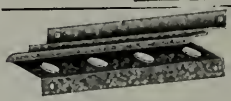

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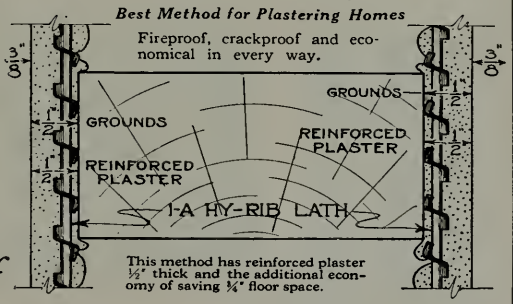

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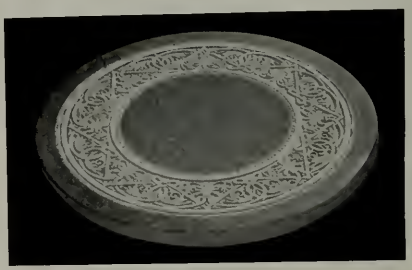

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Pacific Five-Ply Board is sawed and worked just as you would handle lumber. It comes in sheets 4 feet wide and in lengths from 6 to 16 feet. It is strong, durable, attractive in appearance, easily installed, sanitary, and economical. Send for descriptive literature.

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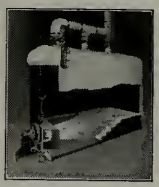

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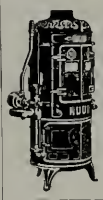

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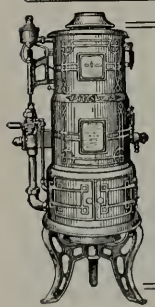

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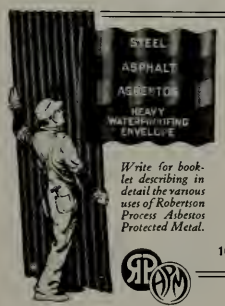

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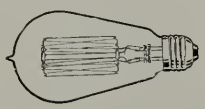

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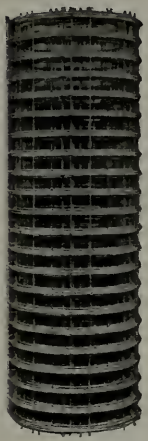

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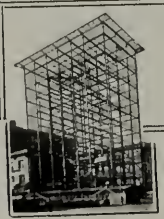

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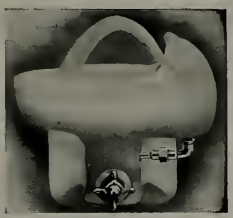
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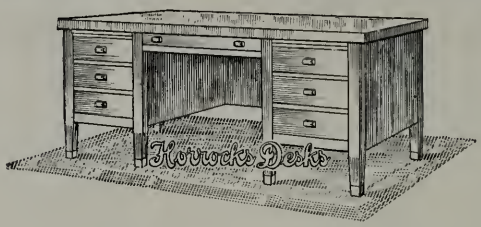

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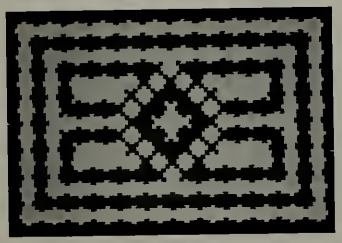

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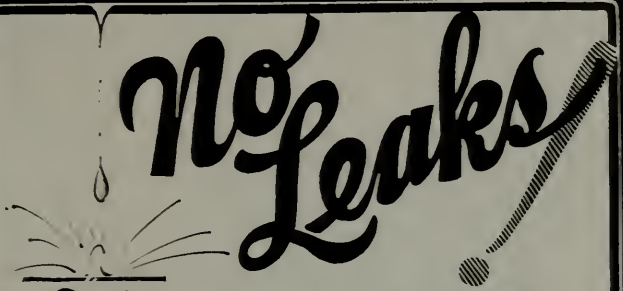

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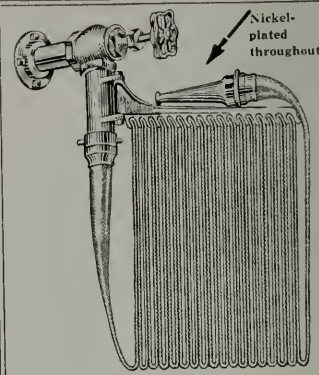

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Metprodco Reversible and Double Hung Steel Windows

UNITED STATES METAL PRODUCTS CO.

330 Tenth St., San Francisco, Calif.
Lumber Exchange, Seattle, Wash.
Exchange Bldg., Portland, Ore.

Bank of Italy Bldg., Los Angeles, Calif.
Paulsen Bldg., Spokane, Wash.
Provident Bldg., Tacoma, Wash.

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ASBESTOS MATERIALS
Johns-Manville Inc., of California, 500 Post street, San Francisco.
Western Asbestos Magnesia Company, 25 South Park. San Francisco.
Jones Bros. Asbestos Supply Co., Inc., 500 Second St.. San Francisco.
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

ART METAL
Federal Ornamental Iron and Bronze Co., 16th St., and San Bruno Ave., San Francisco.
Michel & Pfeffer Iron Works, 1415 Harrison street, San Francisco.
California Artistic Metal & Wire Co., 349 Seventh street, San Francisco.

ARCHITECTURAL TERRA COTTA
N. Clark & Sons, 116 Natoma St., San Francisco.
Gladding, McBean & Company, Crocker Bldg., San Francisco.
Livermore Fire Brick Works, 604 Mission Street, San Francisco.
Tropico Potteries, Inc., Glendale, Cal.

AUTOMOBILE TURNTABLES
M. E. Hammond, Pacific building, San Francisco.

BANK FIXTURES AND INTERIORS
C. F. Weber & Co., 601 Mission St., San Francisco.
Home Mfg. Co., 552 Brannan St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
Pacific Manufacturing Company, San Francisco, Los Angeles, Oakland and Santa Clara.
The Fink & Schindler Company, 218-13th St., San Francisco.

BATHROOM ACCESSORIES
The Fairfacts Company, Inc., 234 W. 14th St., New York.

BEDS—WALL
California Wall Bed Co., 714 Market St., San Francisco.
Marshall & Stearns Co., Phelan Bldg., San Francisco.
Brown Disappearing Bed Company, 746 Phelan Building, San Francisco.

BELTING AND PACKING
New York Belting and Packing Company, 519 Mission St., San Francisco.
H. N. Cook Belting Co., 401 Howard St., San Francisco.
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

BLACKBOARDS
C. F. Weber & Co., 601 Mission St., San Francisco, Los Angeles and Reno, Nevada.
Stewart Sales Co., 247 Rialto Building, San Francisco.
Western States Seating Company, 39 Second Street, San Francisco.

BLINDS—VENETIAN AND DIFFUSELITE
Western Blind & Screen Company, factory, Los Angeles; San Francisco representatives, Edward C. Dehn, Hearst Bldg., and C. F. Webber Co.

BOILERS
Birchfield Boiler Company, Tacoma, Washington. See advertisement for Coast agencies.
Kewanee Boiler Company, Factory Branch, Exposition Building, San Francisco.
Kewanee Water Supply System, Simonds Machinery Co., 816 Folsom St., San Francisco. Francisco.
Main Iron Works, 1000 Sixteenth Street, San Francisco.

BONDS FOR CONTRACTORS
Bonding Company of America, Kohl Bldg., San Francisco.
Globe Indemnity Co., 444 California St., San Francisco.
Fidelity & Casualty Co. of New York, Balfour Bldg., San Francisco.
Standard Accident Insurance Company, California Commercial Union Building, San Francisco.

BOXBOARD FIBRE SHIPPING CASES
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

BRASS GOODS, CASTINGS, ETC.
H. Mueller Manufacturing Co., 1072-76 Howard St., San Francisco.

BRICK—FACE, COMMON, ENAMEL, GLAZED
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
N. Clark & Sons, 116 Natoma St., San Francisco.
Richmond Pressed Brick Co., Sharon Bldg., San Francisco. Plant at Richmond, Cal.
Livermore Fire Brick Works and California Brick Co., 604 Mission St., San Francisco.
Cannon & Co., Sacramento; and 77 O'Farrell St., San Francisco.

BRICK & CEMENT COATING
Armorite and Concreta, manufactured by W. P. Fuller & Co., all principal Coast cities.
Minwax Co., Inc., 22 Battery St., San Francisco and 653 S. Clarence St., Los Angeles.
The Paraffine Companies, Inc., 475 Brannan St., San Francisco.
R. N. Nason & Co., 151 Potrero Ave., San Francisco.
Wadsworth, Howland & Co., Inc., Jas. Hambly & Son, 1333 E. 7th St., Los Angeles, and 229 Clay St., San Francisco.

BRICK STAINS
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Armorite and Concreta, manufactured by W. P. Fuller & Co., all principal Coast cities.

BUILT-IN FIXTURES
Built-In Fixture Company, 2608 San Pablo Ave., near Dwight Way, Berkeley, and Hoosier Store, Pacific Building, San Francisco.

BUILDERS' HARDWARE
Joost Bros., agents for Russell & Erwin Hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn., Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
Palace Hardware Company, Agents Corbin goods, 581 Market St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora; Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

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BUILDING MATERIALS, SUPPLIES, ETC.
- Pacific Materials Co., Underwood Bldg., San Francisco.
- Waterhouse-Wilcox Co., 523 Market St., San Francisco.
- C. H. Jensen Co., Call Building, San Francisco.

BUILDING PAPER
- The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

BUILDING TILE (Burned Clay)
- California Brick Co., 604 Mission St., San Francisco.

BURGLAR ALARMS
- Smith Electric Company, 50 Natoma St., San Francisco.

CABINET MAKERS
- Fink & Schindler Company, 218 13th St., San Francisco.
- Mullen Manufacturing Company, 64 Rausch St., San Francisco.
- Lannom Bros. Mfg. Co., 5th and Magnolia Sts., Oakland.
- Pacific Mfg. Co., San Francisco, Los Angeles and Oakland.

CEMENT
- Old Mission Portland Cement Co., Standard Oil Building, San Francisco.
- Medusa Stainless White Cement, plain and waterproofed, carried in stock and sold by leading building supply dealers in California, Oregon and Washington.
- The Paraffine Companies, San Francisco, and principal Coast Cities.
- Pacific Portland Cement Co., Pacific Building, San Francisco; Portland, San Jose and Los Angeles.
- Monolith Portland Cement Company, 703 Market St., San Francisco and Los Angeles.

CEMENT EXTERIOR WATERPROOF PAINT
- Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
- Minwax Co., Inc., 22 Batery St., San Francisco and 653 S. Clarence St., Los Angeles.
- The General Fireproofing Company, 20 Beale Street, San Francisco
- Bay State Brick and Cement Coating, sold by James Hambly, 229-233 Clay St., San Francisco.

CEMENT GUN CONSTRUCTION
- Cement Gun Construction Co., Hobart Building, San Francisco.

CEMENT—WATERPROOF
- Monolith Portland Cement Co., 215 W. 7th St., Los Angeles, and 800 Claus Spreckels Building, San Francisco.

CEMENT STUCCO
- "California" sold by California Stucco Products Company, 340 Dore St., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CLAY PRODUCTS
- N. Clark & Sons, 116 Natoma St., San Francisco.
- California Brick Co. and Livermore Fire Brick Works, 604 Mission St., San Francisco.
- Cannon & Co., Sacramento, Cal.
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Tropico Potteries, Inc., Glendale, Cal.
- United Materials Co., Sharon Bldg., San Francisco.

CLOCKS—ELECTRIC TIME
- Standard Electric Time Co., 461 Market St., San Francisco.
- Pacific Electric Clock Company, 86 Third St., San Francisco.

CONCRETE CONSTRUCTION
- Vannucci Bros., 16th and Church Streets, San Francisco.
- Villadsen Bros., Inc., 749 Monadnock Building, San Francisco.

COMPOSITION FLOORS
- "Linotol" plastic flooring, Hill, Hubbell & Co., 115 Davis St., San Francisco; 410 San Fernando Bldg., Los Angeles.
- Western Asbestos Magnesia Company, 25 South Park, San Francisco.

CONCRETE OR CEMENT HARDENER
- Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- The General Fireproofing Company, 20 Beale Street, San Francisco

CONCRETE MIXERS
- Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.

CONCRETE REINFORCEMENT
- Edw. L. Soule Co., Rialto Bldg., San Francisco.
- Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric, Wickwire Spencer Steel Corporation, 144 Townsend St., San Francisco.
- Judson Mfg. Co., 817-821 Folsom St., San Francisco.
- Pacific Coast Steel Company, Rialto Bldg., San Francisco.
- Triangle Mesh Fabric. Sales agents, Pacific Materials Co., 525 Market St., San Francisco.
- Truscon Steel Co., 709 Mission St., San Francisco.
- Badt-Falk Co., Call-Post Bldg., San Francisco.

CONDUITS
- "Sherarduct," Garnett Young & Company, 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
- Hansen, Robertson & Zumwalt, 4145 Broadway, Oakland.
- Barrett & Hilp, 918 Harrison St., San Francisco.
- Herbert Beckwith, Everson Bldg., Oakland.
- Larsen-Siegrist Co., Inc., 807 Claus Spreckels Bldg., San Francisco.
- Lindgren-Swinerton, Inc., Standard Oil Building, San Francisco

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R. W. Littlefield, 357-12th St., Oakland.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Dinwiddie Construction Co., Crocker Bldg., San Francisco.
John M. Bartlett, 357 Twelfth St., Oakland.
Clinton Construction Company, 923 Folsom St., San Francisco.
Monson Bros., 251 Kearny St., San Francisco.
Geo. Wagner, Park Ave., San Francisco.
McLeran & Co., R., Hearst Bldg., San Francisco.
Vukicevich & Bagge, 815 Bryant St., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.
I. M. Sommer, 401 Balboa Bldg., San Francisco.
Jas. L. McLaughlin, 251 Kearny St., San Francisco.
Alfred H. Vogt, 185 Stevenson St., San Francisco.
Carl T. Peterson, 185 Stevenson St., San Francisco.

CONTRACTORS' EQUIPMENT

Edward R. Bacon Co., Folsom at 17th St., San Francisco, and Los Angeles.

CONVENIENCE OUTLETS

Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St.

CORK TILE

Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.
David E. Kennedy, Sharon building, San Francisco, and Story building, Los Angeles.

CORK TILE FOR FLOORS

Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles, St., Los Angeles.
David E. Kennedy, Sharon Building, San Francisco, Story Building, Los Angeles.

CRUSHED ROCK

Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.

DAMP-PROOFING AND WATERPROOFING

Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
"Imperial," manufactured by Brooks & Doerr, Merchants National Bank Building, San Francisco.
Minwax Co., Inc., 22 Battery St., San Francisco, and 653 S. Clarence St., Los Angeles.
Samuel Cabot Co., Boston; represented in San Francisco by Pacific Materials Co., Underwood Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by the Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco

DOOR HANGERS

Pitcher Hanger, sold by National Mill & Lumber Co., 326 Market St., San Francisco.
Richard-Wilcox Mfg. Co., the Ewing-Lewis Co., 626 Underwood Building, San Francisco.
Stanley Works, New Britain, Conn... Monadnock Bldg., San Francisco.

DRAIN PIPE AND FITTINGS

"Corrosiron" Acid Proof, manufactured by Pacific Foundry Co., Harrison and 18th Sts., San Francisco.

DRAIN TILE

California Brick Company, 604 Mission Street, San Francisco.

DRINKING FOUNTAINS

Haws Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS

Spencer Elevator Company, 166-7th St., San Francisco.
San Francisco Elevator Company, Inc., 860 Folsom St., San Francisco.
Elevator Supplies Co., Inc., Hoboken, N. J.; San Francisco office, 186 Fifth St.
"Chelsea" dumb waitera, sold by M. E. Hammond, Pacific building, San Francisco.

ELECTRICAL CONTRACTORS

Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 956 Folsom St., San Francisco.
Central Electric Company, 177-79 Minna St., San Francisco
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Brown-Langlais Electrical Construction Co., 315 Fifth Street, San Francisco.
Newberry Electric Company, Alta Bldg., San Francisco
Smith Electric Company, 50 Natoma St., San Francisco.
Decker Electrical Construction Company, 149 New Montgomery St., San Francisco.
Electric Construction Company, 616 Broadway, Fresno.

ELECTRIC PLATE WARMER

The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Pacific Bldg., San Francisco.

ELECTRICAL PLUGS, RECEPTICALS, ETC.

Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT

"H. & H. Switches," Garnett Young & Co., 612 Howard St., San Francisco.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St.
Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.
Trumbull Electric Mfg. Co., Plainville, Conn. and 595 Mission Street, San Francisco.

Los Angeles, 871-164 S. F. Phone, Garfield 204

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ARCHITECTS' SPECIFICATION INDEX—Continued

ELECTRIC SAFETY INTERLOCKS
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.

ELECTRIC HEATING
"Glolog" manufactured by Strait & Richards, Inc., Newark, N. J., represented by Atlantic Pacific Agencies Corporation, 204 Rialto Building, San Francisco.
Wesix Electric Heaters, manufactured by W. Wesley Hicks, Rialto Building, San Francisco.

ELEVATORS—PASSENGER and FREIGHT
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 166-7th St., San Francisco.
San Francisco Elevator Co., 860 Folsom St., San Francisco.
Van Emon Elevator Company, 1159 Howard St., San Francisco.

ELEVATOR MOTORS AND CONTROL
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and First National Bank Bldg., San Francisco, Calif.

ELEVATOR SIGNALS, DOOR EQUIPMENT
Elevator Supplies Co., Inc., Hoboken, N. J.; San Francisco office, 186 Fifth St.
Randall Control & Hydrometric Corporation, 265A Minna St., San Francisco, and 523 Central Bldg., Los Angeles.
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.

ENGINEERS — CONSULTING, ELECTRICAL, MECHANICAL
Hunter & Hudson, Rialto Bldg., San Francisco.
Robert L. St. John, 1011 Flat Iron Bldg., San Francisco
Charles T. Phillips Company, Bank of Italy Bldg., San Francisco, and Roberts Bldg., Los Angeles.

FAIENCE TILE
Tropico Potteries, Inc., Glendale, Cal.

FELTS
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

FENCES—WIRE AND IRON
Standard Fence Company, 432 Bryant, San Francisco and 60th and Lowell Sts., Oakland.

FIRE BRICK, TILE & CLAY
Livermore Fire Brick Works, 604 Mission St., San Francisco.

FIRE EXIT LATCHES
Vonnegut Hardware Co., Indianapolis, Ind., represented in San Francisco by C. H. Jensen Co., Call Building.

FIRE ESCAPES
Michel & Pfeffer Iron Works, 1415 Harrison St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.

FIRE HOSE RACKS
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

FIREPLACE—ELECTRIC
"Glolog," manufactured by Strait & Richards, Inc., represented by Atlantic Pacific Agencies Corp., Rialto Building, San Francisco.

FIRE-PROOF DOORS
Forderer Cornice Works, 269 Potrero Ave., San Francisco.
U. S. Metal Products Co., 330-10th St., San Francisco.
Kinnear Mfg. Co., represented in San Francisco by Pacific Materials Co., Underwood Bldg.

FIRE SPRINKLERS—AUTOMATIC
Fire Protection Engineering Co., 142 Sansome St., San Francisco.
Grinnell Company of the Pacific, 453 Mission St., San Francisco.
Independent Automatic Sprinkler Co., 72 Natoma St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIRE RETARDING PAINT
The Paraffine Companies, Inc., 34 First St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 552 Brannan St., San Francisco.
The Fink & Schindler Company, 218-13th St., San Francisco.
Mullen Manufacturing Co., 64 Ranch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLAG POLES—STEEL
Pole & Tube Works, Newark, N. J., represented by H. M. Holway, 1007 Hobart Building, San Francisco, and 600 Metropolitan Building, Los Angeles.

FLOORS, BLOCK
Carter, Bloxonend Flooring Co., Kansas, Mo., represented on Pacific Coast by H. M. Holway, 1007 Hobart Building, San Francisco.

FLOOR CLIPS
Bull Dog Floor Clip Sales Co., 77 O'Farrell St., San Francisco, and 600 Metropolitan Bldg., Los Angeles.
Grip-Tite floor anchors, Cheek & Gillis, 625 Call Building, San Francisco.

FLOORING, HEAVY DUTY
Carter, Bloxonend Flooring Co., Kansas, Mo., represented on Pacific Coast by H. M. Holway, 1007 Hobart Building, San Francisco.

FLOORS—TILE, CORK, ETC.
Mangrum & Otter, 827 Mission St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, 55 Stevenson Street, San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

FLOORS—HARDWOOD
Oak Flooring Bureau, Ashland Block, Chicago, Ill.
Cadwallader, Gibson Co., 5th & Brannan St., San Francisco.
Parrott & Co., 320 California St., San Francisco.

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PORTLAND 151 Potrero Ave.—SAN FRANCISCO—436 Market St. SEATTLE

ARCHITECTS' SPECIFICATION INDEX—Continued

Strable Hardwood Company, 511 First St., Oakland.
E. L. Bruce Co., Manufacturers, Memphis, Tenn.
J. E. Higgins Lumber Company, 423 Sixth St., San Francisco.

FLOOR TREATMENT—HARDWOOD, COMPOSITION AND CONCRETE
Minwax Co., Inc., 22 Battery St., San Francisco and 653 S. Clarence St., Los Angeles.

FLOORS—MASTIC—FLOOR COVERING
Hill, Hubbell & Company, 115 Davis St., San Francisco.
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

FLUE LINING
California Brick Company, 604 Mission St., San Francisco.

FLUSH VALVES
Handy Self-Cleaning Flush Valve Co., 731 Folsom St. San Francisco.
Shroeder Flush Valve Company, 1300 N. Main Street, Los Angeles and 16 Steuart Street, San Francisco.

FUEL OIL SYSTEMS
S. T. Johnson Co., 1337 Mission St., San Francisco.
S. F. Bowser & Co. Inc., 612 Howard St., San Francisco.
Wayne Tank and Oil Co., 430 Fourth St., San Francisco.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.
C. B. Babcock Company, 768 Mission St., San Francisco.

FURNITURE—OFFICE, SCHOOL, CHURCH,
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., Second and Mission Sts., San Francisco.
W. & J. Sloane, 216 Sutter St., San Francisco.
Western States Seating Co., 39 Second St., San Francisco.
H. Rumph, 567 Howard St., San Francisco.
Fink & Schindler Company, 218-19th St., San Francisco.

FURRING TILE (Burned Clay)
California Brick Company, 604 Mission St., San Francisco.

GARAGE HARDWARE
The Stanley Works, New Britain, Conn., Coast sale offices, San Francisco, Los Angeles and Seattle, Wash.
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.

GAS HEATING
Pittsburg Water Heater Company, 478 Sutter St., San Francisco.
Ruud Automatic Water Heater, sold by Ruud Heater Company, 431 Sutter St., San Francisco.
C. B. Babcock Company, representing General Gas Light Company, 768 Mission St., San Francisco.

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 862 Mission St., San Francisco.
Cobbledick-Kibbe Glass Co., 666 Howard St., San Francisco.
Fuller & Gnepp, 32 Page St., San Francisco, and Jackson, at Eleventh St., Oakland.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.

GRANITE
Raymond Granite Co., Potrero Ave., and Division St., San Francisco.

GRAVEL AND SAND
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

GYMNASIUM EQUIPMENT—LOCKERS, ETC.
Ellery Arms Co., 583 Market St., San Francisco.

HARDWALL PLASTER
"Empire," manufactured by Pacific Portland Cement Co., Pacific Building, San Francisco; Portland, San Jose and Los Angeles.

HARDWARE
Joost Bros., agents for Russell & Erwin Hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn.; Coast sales offices, San Francisco, Los Angeles, and Seattle Wash.
Vonnegut hardware, sold by G. H. Jensen Co., Call Bldg., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill.; Ewing-Lewis Co., 626 Underwood Building, San Francisco.

HEATING AND VENTILATING CONTRACTORS
Atlas Heating and Ventilating Company, Inc., Fourth and Freelon Sts., San Francisco.
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Lawson & Drucker, 450 Hayes St., San Francisco.
Lupen and Hawley, 906 7th St., Sacramento.
William F. Wilson Co., 328 Mason St., San Francisco.
W. H. Picard, 5656 College Ave., Oakland.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
H. G. Newman Co., 2004 Telegraph Ave., Oakland.

HEATING & VENTILATING EQUIPMENT
W. S. Haines & Co.'s steam specialties. O. M. Simmons Company, 115 Mission St., San Francisco.

W. S. Haines & Co., Steam Specialties, Vacuum and Vapor Systems of Heating
"Twenty-four years of satisfactory service."
(See Page 1503 of Sweet's Catalogue)
O. M. SIMMONS CO. 115 Mission St., San Francisco Phone: Douglas 5497

INDUSTRIAL PLANTS BUILDING CONSTRUCTION

VILLADSEN BROTHERS
INCORPORATED
ENGINEERS & CONTRACTORS
MONADNOCK BLDG. SAN FRANCISCO

ARCHITECTS' SPECIFICATION INDEX—Continued

C. A. Dunham, Chicago, Illinois; 585 Mission Street, San Francisco, and 119 E. 3rd Street, Los Angeles.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.
Illinois Engineering Co., 417 Market St., San Francisco.
Warren Webster & Company, Sharon Building, San Francisco.

HEATERS, GAS GRATES, RADIATORS, ETC.
General Gas Light Company, 768 Mission St., San Francisco.
Ra-Do Fumeless Gas Radiators, Potter Radiator Corporation, 478 Sutter St., San Francisco
Humphrey Radiantfire, sold by Rudd Heater Company, 431 Sutter St., San Francisco.
Pacific Gas Steam Radiator Company, "Gas Steam Radiators," 571 Mission Street, San Francisco.

HOLLOW BUILDING TILE (Burned Clay)
California Brick Company, 604 Mission St., San Francisco.

HOLLOW TILE BLOCKS
Cannon & Co., plant at Sacramento; 77 O'Farrell St., San Francisco.
California Brick Company, 604 Mission St., San Francisco.
Gladding, McBean & Co., San Francisco, Los Angelea, Oakland and Sacramento.

HOSE—UNDERWRITERS UNLINED LINEN—RUBBER
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEMS
Chicago Signal Co., represented by Garnett Young & Co., 612 Howard St., San Francisco.

HOTELS
St. Francis Hotel, Powell and Post Streets, San Francisco.

ICE MAKING MACHINERY
"Frigedaire," Sold by W. L. Cochran, 880 Mission St., San Francisco.

INCINERATORS
The Incinerite, sold by M. E. Hammond, Mezzanine, Pacific Building, San Francisco.

INDUSTRIAL LIGHTING EQUIPMENT
Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., and First National Bank Building, San Francisco.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and 10th and Bryant Sts., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSULATION
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.

JAIL EQUIPMENT
Ralston Iron Works, 20th and Indiana Sts., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE ARCHITECT
Emeraon Knight, 704 Market St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 514-516 Phelan Bldg., San Francisco.

LATHING AND PLASTERING
MacGruer & Simpson, 226 Tehama St., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.

LATHING MATERIAL—WIRE, METAL, ETC.
Pacific Materials Co., 525 Market St., San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco
Truscon Steel Co., 709 Mission Street, San Francisco.
Wickwire Spencer Steel Corporation, 144 Townaend St., San Francisco.
United Alloy Steel Corporation, Canton, Ohio; Western Sales Office, Santa Fe Building, San Francisco.

LIGHTING FIXTURES
Benjamin Electric Mfg. Co., New York, Chicago, 580 Howard St., San Francisco.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St., San Francisco.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.

LIMESTONE, INDIANA
Indiana Limestone Quarrymen's Association, Box 770, Bedford, Indiana.

LINOLEUM
D. N. & E. Walter & Co., 562 Mission St., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.
W. & J. Sloane, 216 Sutter St., San Francisco.
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.
Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles St., Los Angeles.

LINOTILE
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.

LOGS—ELECTRIC
"Gloglog," manufactured by Strait & Richards, Inc., represented by Atlantic Pacific Agencies Corp., Rialto Building, San Francisco.

LUMBER
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland, Los Angeles and Santa Clara.

RAY COOK MARBLE CO.
IMPORTED AND DOMESTIC MARBLES
For Building Construction
Factory and Office, foot of Powell St., Oakland Phone Piedmont 1009

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JOSEPH MUSTO SONS--KEENAN CO.

Phone Franklin —6365— MARBLE Office and Mills: 535-565 North Point St.. SAN FRANCISCO. CAL.

ARCHITECTS' SPECIFICATION INDEX—Continued

Pope & Talbot, foot of Third St., San Francisco.
Santa Fe Lumber Co., 16 California St., San Francisco.
J. E. Higgins Lumber Company, 423 Sixth St., San Francisco.
Sunset Lumber Company, First and Oak Sts., Oakland.

LUMBER—HARDWOOD
Davis Hardwood Co., Bay and Mission Streets, San Francisco.

MANTELS—WOOD, TILE, ETC.
Mangrum & Otter, 827-831 Mission St., San Francisco.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Ray Cook Marble Company, foot of Powell St., Oakland.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.
Tompkins-Kiel Marble Company, 505 Fifth Ave., New York; also Chicago, Philadelphia and San Francisco.
Columbia Marble Co., 413 Rialto Bldg., San Francisco.

METAL DOORS AND WINDOWS
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 330 Tenth St., San Francisco.
Forderer Cornice Works, 269 Potrero Ave., San Francisco.
Michel & Pfeffer, Harrison and Tenth Streets, San Francisco.

METAL FURNITURE
Forderer Cornice Works, 269 Potrero Ave., San Francisco.
United Alloy Steel Corporation, Canton, Ohio; Western Sales Office, Santa Fe Building, San Francisco.

METAL STORE FRONTS
Cobbledick-Kibbe Glass Company, 666-8 Howard street, San Francisco, and Washington at Third St., Oakland.

METAL TRIM
Knapp Bros. Manufacturing Co., 625 Call Building, San Francisco.

MILL WORK
Pacific Manufacturing Company, San Francisco, Los Angeles, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
Lannom Bros. Mfg. Co., 5th and Magnolia Sts., Oakland.
The Fink & Schindler Company, 218-13th St., San Francisco.

OIL BURNERS
Bunting Iron Works, 1215 First Nat. Bank Bldg., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
G. E. Witt Co., 862 Howard St., San Francisco.
W. S. Ray Mfg. Company, Rialto Bldg., San Francisco, and 2206 San Pablo Ave., Oakland.

OIL STORAGE AND DISTRIBUTING STATIONS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Oil Tank & Pump Co., 430 Fourth St., San Francisco; 830 S. Los Angeles St., Los Angeles.

ORNAMENTAL IRON AND BRONZE
California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Federal Ornamental Iron and Bronze Co., 16th St., and San Bruno Ave., San Francisco.
Michel & Pfeffer Iron Works, 1415 Harrison St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.

PANEL BOARDS
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.

PANIC DOORS
Vonnegut hardware, sold by C. H. Jensen Co., Call Bldg., San Francisco.

PAINT FOR CEMENT AND STUCCO
Wadsworth, Howland & Co., Inc., Jas. Hambly & Son, 1333 E. 7th St., Los Angeles, and 229 Clay St., San Francisco.

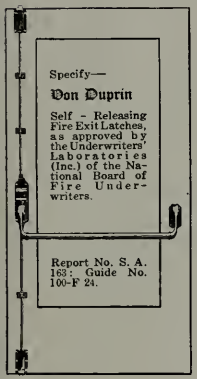
PAINT FOR STEEL STRUCTURES, BRIDGES
The Paraffine Companies, Inc., 34 First St., San Francisco.
Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
Hill, Hubbell & Company, 115 Davis St., San Francisco.

PAINTING, DECORATING, ETC.
I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
A. Quandt & Son, 374 Guerrero St., San Francisco.

SILENT CALL Chicago HOSPITAL SIGNAL SYSTEMS
GARNETT YOUNG AND COMPANY
Pacific Coast Sales Engineers
612 Howard St., San Francisco
Seattle Los Angeles Portland

Von Duprin

Self-Releasing Fire Exit Latches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But—if he *does* have a fire or a panic in the building, the presence of **Von Duprins** on the exit doors will be a priceless asset, perhaps saving the lives of a number of the inmates.

There is only one way to be absolutely sure that the building housing large numbers of people is safe—and that way is to equip all exit doors with **Von Duprin** latches.

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W. Harry Edwards, Architect
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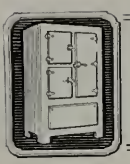

Frigidaire

The Electric Refrigerator for Home, Apartment, Store, Etc.

Made By DELCO-LIGHT COMPANY, Dayton, Ohio
W. L. COCHRAN, INC., Distributor, 880 Mission St., San Francisco

ARCHITECTS' SPECIFICATION INDEX—Continued

PAINTS, OILS, ETC.
Magner Bros., 414-424 Ninth St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco and all principal Coast cities.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
Standard Varnish Works, 55 Stevenson St., San Francisco.
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.
Oakley Paint Manufacturing Company, 727 Antonia St., Los Angeles, and Hearst Building, San Francisco.

PLASTERING CONTRACTORS
A. Knowles, Call Bldg., San Francisco.
MacGruer & Simpson, 266 Tehama St., San Francisco.

PLASTER REINFORCEMENT
National Steel Fabric Co., Monadnock Building, San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.
Luppen & Hawley, 906 7th St., Sacramento.
W. H. Picard, 5656 College Ave., Oakland.
H. G. Newman Company, 2004 Telegraph Ave., Oakland.

PLUMBING SUPPLY HOUSES
Crane Company, all principal coast cities.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
H. Mueller Manufacturing Company, 1072-76 Howard St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
West Coast Porcelain Manufacturers, 334-335 Wells Fargo Building, 85 Second St., San Francisco.

POLES AND PILING
Santa Fe Lumber Co., 16 California St., San Francisco.

PUMPS—HAND OR POWER
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
Simonds Machinery Co., 816 Folsom Street, San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Pelton Water Wheel Co., 2022 Harrison St., San Francisco.
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Tank & Pump Co., 430 Fourth St., San Francisco; 830 S. Los Angeles St., Los Angeles.
Byron Jackson Iron Works, 55 New Montgomery St., San Francisco.

REINFORCING STEEL
Edward L. Soule, Rialto Bldg., San Francisco.
Badt-Falk & Co., Call Bldg., San Francisco.
Judson Iron Works, San Francisco and Oakland.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Pacific Coast Steel Co., Rialto Bldg., San Francisco.
Truscon Steel Co., 709 Mission St., San Francisco.
United Alloy Steel Corporation, Canton, Ohio; Western Sales Office, Santa Fe Building, San Francisco.

REFLECTORS
Benjamin Electric Mfg. Co., 580 Howard St., San Francisco.

REFRIGERATORS
"Frigedaire," Sold by W. L. Cochran, 880 Mission St., San Francisco.

ROOF MATERIALS
"Malthoid" and "Ruberoid," also "Pabco" ten and twenty year roofs, manufactured by the Paraffine Companies, Inc., San Francisco.
United Materials Co., Sharon Bldg., San Francisco.
Gladding, McBean & Co., Crucker Building, San Francisco.
California Brick Company, 604 Mission Street, San Francisco.
H. H. Robertson Co., Hobart Bldg., San Francisco.
Jones Brothers Asbestos Supply Co., 500 Second St., San Francisco.
Johns-Manville Inc., of California, 500 Post St., San Francisco.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.

RUBBER TILING—INTERLOCKING
New York Belting & Packing Co., 518-19 Mission St., San Francisco.

RUBBER TILING
Wright Rubber Products Co., represented by Check & Gillis, 625 Call Bldg., San Francisco.
United States Rubber Co., 300 Second Street, San Francisco and 923 S. Los Angeles Street, Los Angeles, Calif.
Bonded Floors Co., Inc., 370 2nd Street, San Francisco and 263 South Los Angeles Street, Los Angeles.

RUGS & CARPETS
W. & J. Sloane, 216 Sutter St., San Francisco.

SAFETY TREADS
Pacific Materials Co., 525 Market St., San Francisco.

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FOR BUILDINGS, INDUSTRIAL PLANTS, ETC.

ROBERT L. ST. JOHN

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The use of this clip to anchor wood floors to concrete is cheap insurance against floor buckle and dry rot. Write for samples and special information.

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L. T. KELLEY, General Manager

ARCHITECTS' SPECIFICATION INDEX—Continued

SAFETY SWITCHES
Trumbull Electric Mfg. Co., Plainville, Conn. and 595 Mission Street, San Francisco.

SAND
Coast Rock & Gravel Co., Call Bldg., San Francisco.
Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SASH AND CABLE CHAINS
American Chain Co., Bridgeport, Conn. and Rialto Building, San Francisco.
Smith & Egge Mfg. Co., Bridgeport, Conn. Coast agents, Rawlins & Smith, San Francisco and Los Angeles.

SAFES AND VAULTS
Hermann Safe Company, 216 Fremont St., San Francisco.

SCALES
Toledo Scale Company, 676 Mission St., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., Los Angeles and San Francisco.

SCHOOL AND THEATER EQUIPMENT
H. Rumpf, 567 Howard St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

SHEET METAL WORK
Forderer Cornice Works, 269 Potrero Ave., San Francisco.
United Alloy Steel Corporation, Canton, Ohio; Western Sales Office, Santa Fe Building, San Francisco.
The Pacific Rolled Metals Company, 715 Harrison Street, San Francisco.

SHINGLE STAINS
Baas-Hueter Paint Company, all principal Coast cities.
Cabot's Creosote Stains, sold by Pacific Bldg., Materials Co., 525 Market St., San Francisco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.
The Paraffine Companies, San Francisco, and principal Coast Cities.

SIGNALING & PROTECTIVE SYSTEMS
Garnett, Young & Co., 612 Howard St., San Francisco.

SINKS—COMPOSITION
Petrium Sanitary Sink Co., Fifth and Page Sts., Berkeley.

SKYLIGHTS
H. H. Roberts Co., represented on the Pacific Coast by H. L. Holway, 1007 Hobart Building, San Francisco.

STEEL FLAG POLES
Pole and Tube Works, Newark, N. J., represented on Pacific Coast by H. M. Holway, 1007 Hobart Building, San Francisco.

STEEL TANKS
Ocean Shore Iron Works, 55 Eighth St., San Francisco.
Main Iron Works, 1000 Sixteenth St., San Francisco
S. T. Johnson Co., 1337 Mission St., San Francisco.

STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Herrick Iron Works, 18th and Campbell Sts., Oakland.
Michel & Pfeffer Iron Works, 1415 Harrison street, San Francisco.
Judson Mfg. Co., 817-821 Folsom St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Coast Steel Co., Rialto Building, San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Ralston Iron Works, 20th and Indiana streets, San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Western Iron Works, 141 Beale St., San Francisco.

STEEL LUMBER
The General Fireproofing Company, 20 Beale Street, San Francisco

STEEL ROLLING DOORS
Kinnear Rolling Steel Doors, sold by Pacific Building Materials Co., Underwood Bldg., San Francisco.

STEEL SASH
Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
"Fenestra" Solid Steel Sash, manufactured by Detroit Steel Products Co., factory sales office, 251 Kearny St., San Francisco.
Michel & Pfeffer Iron Works, 1415 Harrison street, San Francisco.
Truscon Steel Company, 709 Mission St., San Francisco.

STEP AND WALK BRICK
California Brick Company, 604 Mission St., San Francisco.
United Materials Co., Sharon Bldg., San Francisco.

STONE
Indiana Limestone Quarrymen's Association, Box 770, Bedford, Indiana.
Raymond Granite Company, Potrero Ave. and Division Street, San Francisco.

STREET LIGHTING EQUIPMENT
Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., and First National Bank Building, San Francisco.

STUCCO, COMPOSITION
California Stucco Co., 340 Dore St., San Francisco.
Hoff Magnesite Co., San Francisco. Miller & Ahl, 337 Monadnock Bldg., San Francisco, general agents.

STUCCO-PLASTER REINFORCEMENT
National Steel Fabric Company, Monadnock Building, San Francisco.

STUDDING—FIREPROOF STEEL
The General Fireproofing Company, 20 Beale Street, San Francisco

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SAN FRANCISCO

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Rialto Building Tel. Doug. 1187 San Francisco

ARCHITECTS' SPECIFICATION INDEX—Continued

SWITCHES AND SWITCHBOARDS
- Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco
- Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., and First National Bank Building, San Francisco.
- Trumbull Electric Mfg. Co., Plainville, Conn. and 595 Mission Street, San Francisco.

TELEPHONE SYSTEMS
- "Stromberg-Carlson Telephones," Garnett Young & Company, 612 Howard St., San Francisco.

THEATER AND OPERA CHAIRS
- C. F. Weber & Co., 601 Mission St., San Francisco.
- Western States Seating Co., 133 Kearny St., San Francisco.

THERMOSTATS FOR HEAT REGULATION
- Johnson Service, Rialto Bldg., San Francisco.

TILES FOR FLOORS, MANTELS, ROOFS
- Cannon & Co., Sacramento; and 77 O'Farrell St. San Francisco.
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Livermore Fire Brick Works and California Brick Company, 604 Mission St., San Francisco.
- Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles, St., Los Angeles.

TOILET—SEATS
- The Brunswick-Balke-Collender Company, 623 South Wabash Ave., Chicago, Ill.; Monadnock Building, San Francisco, and Security Building, Los Angeles.

VALVES—PIPES AND FITTINGS
- Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
- Grinnell Co., 453 Mission St., San Francisco.
- O. M. Simmons Co., 115 Mission St., San Francisco.
- H. Mueller Mfg. Co., 1072 Howard St., San Francisco.
- Kennedy Valve Mfg. Co., 23-25 Minna street, San Francisco.
- Schroeder Valve Company, 1300 N. Main Street, Los Angeles; 16 Steuart St., San Francisco.

VALVE PACKING
- N. H. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
- Baas-Hueter Paint Company, Mission, near 4th street, San Francisco, and all principal Coast cities.
- W. P. Fuller Co., all principal Coast cities.
- R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
- Standard Varnish Works, 55 Stevenson St., San Francisco.
- The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

VENTILATORS
- H. H. Robertson Co., represented on the Pacific Coast by H. M. Holway, 1007 Hobart Building, San Francisco.

VITREOUS CHINAWARE
- Pacific Sanitary Manufacturing Company, 67 New Montgomery St., San Francisco.
- West Coast Porcelain Manufacturers, Wells Fargo Building, San Francisco.

WATERPROOFING (See also Dampproofing)
- Medusa Waterproofing, manufactured by Sandusky Cement Co., Cleveland, Ohio. Carried in stock and sold by leading building supply dealers in California, Oregon and Washingt
- The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.

WALL BEDS—SEATS, ETC. (See Beds)

WALL BOARD
- "Amiwud" and "Pabco," manufactured by The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.
- Western Asbestos Magnesia Company, 25 South Park, San Francisco.

WALL PAINT
- Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
- The Brininstool Company, (See advertisement on third cover).

WALL PAPER AND DRAPERIES
- The Tormey Co., 681 Geary St., San Francisco.
- W. & J. Sloane, 216-228 Sutter St., San Francisco.

WATER SUPPLY SYSTEMS
- Kewance Water Supply System—Simonds Machinery Co., agents, 816 Folsom Street, San Francisco.

WHEELBARROWS—STEEL
- Western Iron Works, Beale and Main Sts., San Francisco.

WHITE ENAMEL
- "Gold Seal," manufactured and sold by Baas-Hueter Paint Co. All principal Coast cities.
- "Silkenwhite," made by W. P. Fuller & Co., San Francisco.
- "Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.
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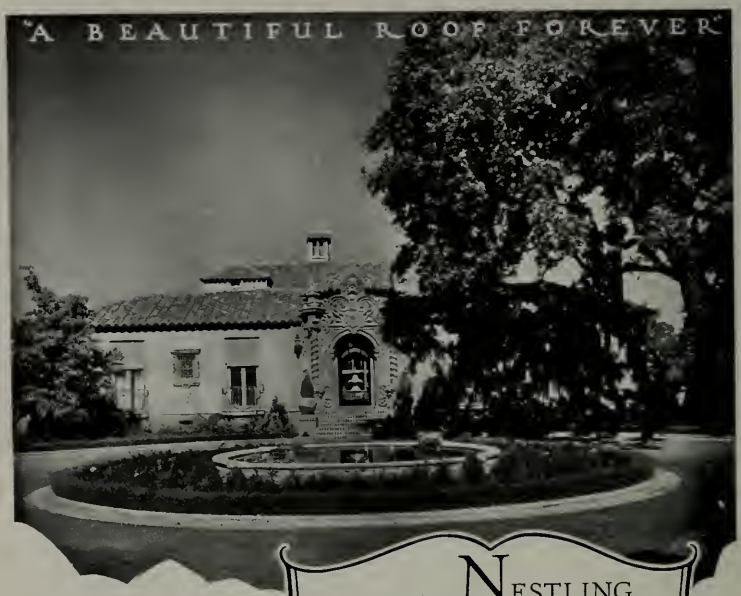

NESTLING picturesquely under the big live oaks of Menlo Park, California, stands the home of Mr. Robert S. Moore, pictured above.

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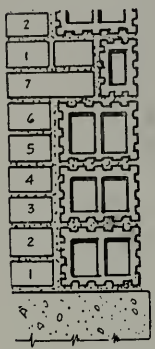

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Detail of Entablature, Wilmington Public Library, Wilmington, Delaware. E. L. Tilton and A. M. Githens, Architects. Frieze and cornice in polychrome Terra Cotta. (Colors, deep yellow buff, gray and blue. Cornice repeats limestone coloring.)

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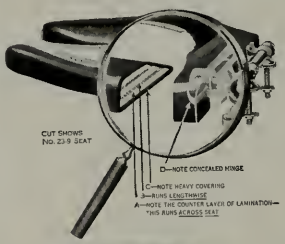

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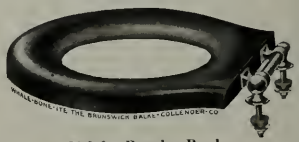

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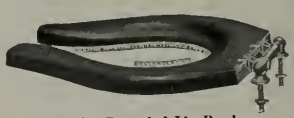

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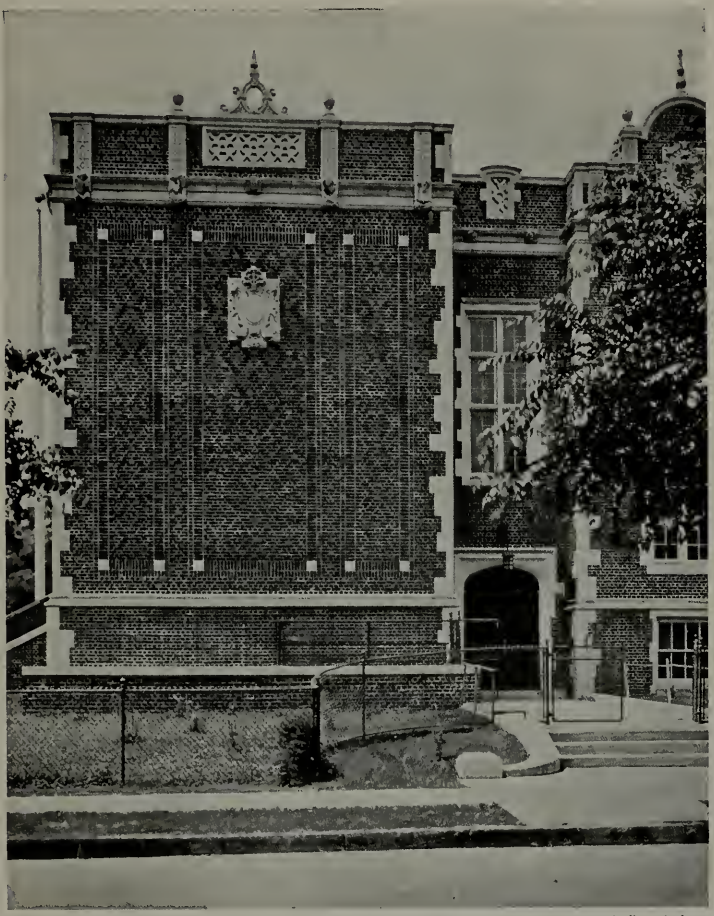

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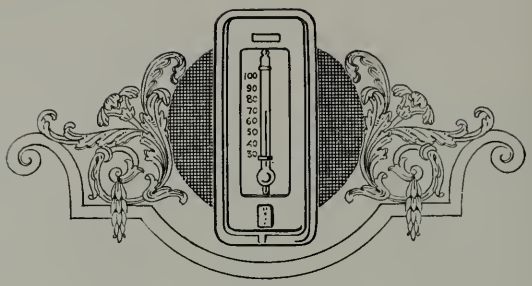

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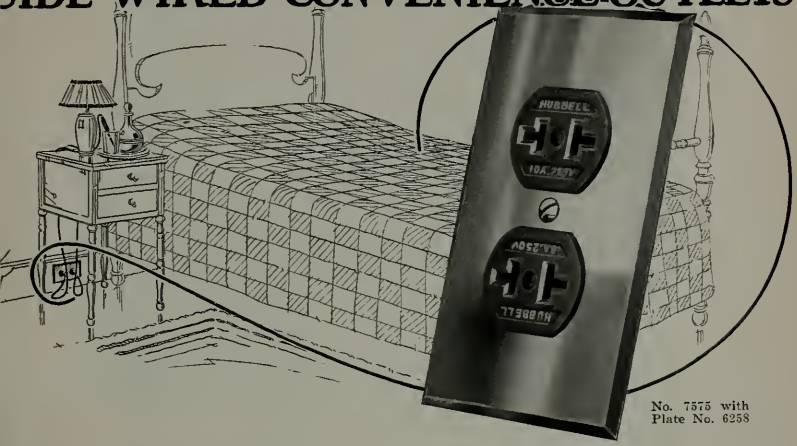

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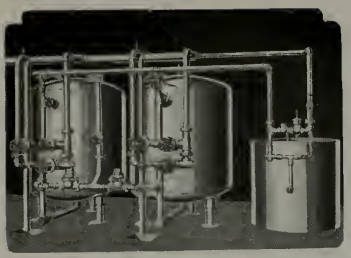

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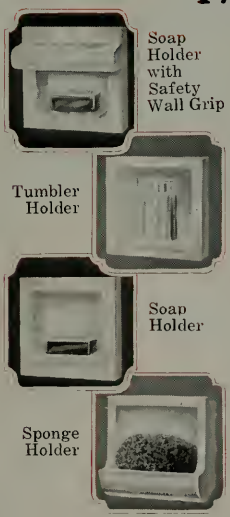

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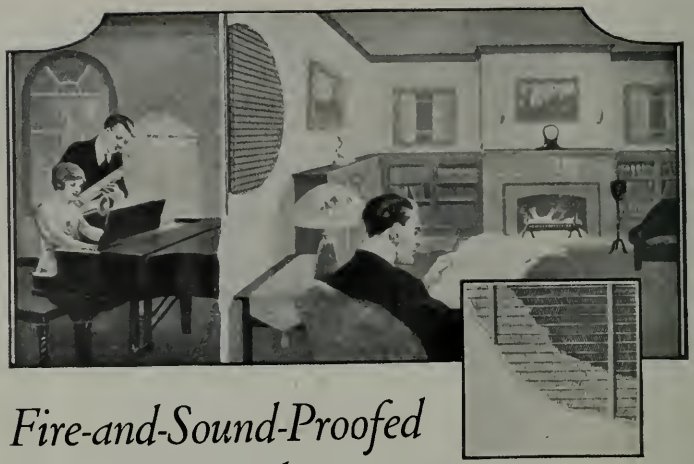

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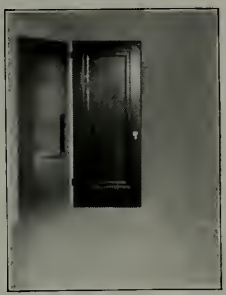
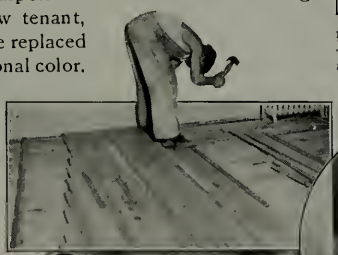


½" x 2" No. 1 Common oak flooring was laid over terrazzo in this modern 53 apartment building in St. Louis. Details on request.



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Frontispiece
The Architect and Engineer
April, 1924

THE
ARCHITECT
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APRIL
1924

VOL. LXXVII
No. 1

On the Importance of Ordinary Houses

By IRVING F. MORROW

AN OUTSIDER basing judgment on the usual exhibitions of professional and student work could not be blamed for concluding that architecture is confined to the useless, the impractical, and the expensive. Here, among war memorials, cathedrals, national capitols, museums, ambassadorial palaces, slight room is found for any intimation that the art should or can have any direct and important relation to people. City planning, much in the public eye, suffers from the same grandiose aloofness. It is commonly presented as a matter of vistaed and colonnaded civic centers, lawns on which nobody dares trespass and buildings at which nobody looks but tourists. The professional journals do somewhat better. They publish frequent houses and annual house numbers. Yet here too, size and richness are apt to be stressed with an insistence which leads the layman to assume that architecture doesn't come under fifty thousand dollars.

And the architect continues to deplore public apathy toward his art.

But why, in fact, should people show interest in things which are without bearing on their lives? Those brought up on domestic jazz, comic supplements and Snappy Stories have naturally no interest in music, painting, and literature. Where constant association has made builders' bungalows seem normal, there can be no appreciation of architecture. Tastes and interests derive from frequent contacts, and no influence is more pervasive than that of the home. The architectural surroundings (including furnishings) of the majority of people are as unfit for human consumption as are their music, pictures, and reading matter.

Eugenists repeat like a slogan that it is every person's right to be well born. Architects must acquire an equal conviction of every person's right to be well housed. And by well housed I do not mean elaborately housed. Nor do I refer to perfection of purely physical aspects like adequate light, ventilation, plumbing, and the rest. Despite an unwarranted prevalence of slum conditions—any amount is unwarranted—it is probably safe to say that the majority of people are housed with

passable sanitation and convenience. As for elaborateness, I believe that one of the most prevalent fallacies of current moderate sized housing is a tendency to wasteful over-complication. Houses contain too many parts. People who live in the simplest manner, and entertain most infrequently and informally, or not at all, demand in their homes an imitation of the differentiation proper to formal and expensive modes of life. Each separate function, no matter how casual, is conceived in terms of a separate apartment, so that floor area is wasted in unnecessary rooms and unnecessarily independent circulation. Why, for instance, should ordinary people be inconvenienced by passing through the dining-room from the kitchen to the front door? Or why, for that matter, should ordinary people require a separate room for the purpose of eating? The persistence of such traditions is doubtless due in part to deficient imagination — a failure to project the conditions of actual living into the plans and to realize where duplication of use would be entirely legitimate

HOUSE OF DR. ALBERT W. HOUSTON, PEBBLE BEACH
George E. McCrea, Architect

under the circumstances. And inertia is not insuperable, after all. More serious is the fact that self-esteem is involved. Since most of us order our whole lives for the neighbors, I suppose there is slight hope of inducing people with an income of two or three thousand dollars a year to accept houses which do not aspire to imply fifty or over.

When I say, then, that it is every person's right to be well housed, I am not speaking sociologically. Not that this aspect is undeserving of attention. Indeed, it is one which the architect must consider even more fully than at present if he is to justify his fondly assumed title of recorder of his civilization. But I am looking now more particularly from the angle of an artist and humanist. From this point of view neither social status nor creature comfort is important. A person is not well housed until his surroundings—building and furnishings—are reasonably human in character and appropriate to his real manner of life. Such an ideal must be consummated in the case of an effective majority of the population before there can be real hope of a public appreciation of architecture.

It sounds easy. But figure what it means. Architects—not the novices and the second-raters, but our best architectural minds—must transfer their predominant interest from grandiose detachment to the humble service of ordinary people. For in the last analysis they are dependent upon ordinary people. There are not enough national capitols and war memorials to go around. And even if there were, the difficulty would not be solved, for people are peculiarly resentful of anything which transcends their limitations. The man at the drawing-board may be able and inspired, but the man in the street has an effective veto on architectural expression. If he has small taste and no ideas he will be puzzled or enraged, according as he is what the psychologists call introvert or extravert, by architecture which displays ideas and taste. And of things which puzzle or enrage him he will have none. This applies not only to his own house, be it noted, but to other buildings erected in his own name. He makes his desires (limitations) only less effective in the

HOUSE OF DR. ALBERT W. HOUSTON, PEBBLE BEACH
George E. McCrea, Architect

public buildings—city halls, schools, memorials, etc.,—for which he helps pay, and the semi-public ones—banks, theatres, hotels, etc.,—which rely upon his patronage. Of all artists the architect is peculiarly at the mercy of other people. Painters may paint and store their pictures in the garret, and musicians and writers may fill all the desk drawers with manuscripts, but few architects could buy land and build buildings nobody wants. Drawings are poor substitutes; for an architect with a genuine builder's instinct the real interest comes when the structure begins to assume concrete form. The architect gets a chance to build only what somebody will take, As long as the public does not want good architecture, his is a losing game.

So it all comes back to this: if the architect is to be permitted to express himself like a self-respecting artist, he must have a receptive public; and the most effective place to attempt the attrition of the public's prejudice, ignorance, and indifference, is in its home. To do this, able and high-spirited men must be prepared to labor without recognition and to suffer indignity with humility. They must lavish affection where

it will go unobserved. They must submit to instruction in design from people who don't know much about art, etc., etc. They must ignore misunderstanding. They must use devious diplomacy to circumvent the petty whims of ignoramuses. In the face of these and other provocations they must calmly pursue the disinterested cause of art. It would almost seem as if the only man temperamentally qualified for the job died some nineteen hundred years ago.

In this matter of building houses the architect's business is not

HOUSE AT SAN DIEGO, CALIFORNIA
W. H. Wheeler, Architect

(See plan page 67)

confined to decorative details. It goes down to fundamentals. It goes deeper than purely architectural fundamentals; it goes to the fundamentals of living. The architect must teach people how to live. Of what use is it to design rational houses if people don't know how to use them? Most people exact and enjoy stupid or meretricious houses because they live stupidly or meretriciously. An architect cannot design a vital dwelling without a vivid conception of the manner of life to go on within it. A house is not a vessel to be filled arbitrarily with any life that happens along, as a kitchen utensil may be used as a promis-

cuous container. Its fundamental arrangement presumes, indeed is the outcome of, a consistently imagined use, which is to say, scheme of life. A gusto for life as an adventure will tolerate no less than an adventurous imaginative flight for a dwelling. I repeat that I am not speaking of embellishments, but of the core. The working out may be as austere as California Mission or as florid as Louis Quelconque; if the vivifying yeast of a flair for life as an adventure does not animate the essentials, it is no proper place for human dwelling. The architect must conceive

HOUSE AT SAN DIEGO, CALIFORNIA
W. H. Wheeler, Architect

(See plan page 67)

himself—and contrive to be recognized—not as a mere draftsman for ignoramuses and dilettanti, but as an orderer of essential things, a creator. If such a state of affairs can be consummated there will be no further complaint that people are apathetic toward good architecture—they will demand it. To bring it about will require a long and hisheartening education in which the architect must welcome his share of the toil and the disillusionment. It means ardent application to fields from which the "big" architects tend to turn in contempt—workers' bungalows and moderate sized houses. Here is the strategic point for attack

on indifference to architecture (and art) in general. And after all, it requires more ingenuity to do something vital with a five thousand dollar house than with a fifty thousand dollar one.

Meanwhile the real estate spec—I mean the realtor—is assiduously at work. His rows of successful bungalows, flats, and apartments are from the human point of view appalling. There is little in current experience calculated to engender so mean a view of human intelligence as the real estate ventures which are successful. I say this with no air of superiority, but with all humility, and even contrition, for I have consented to do them. And indeed how could it be otherwise? Being calculated for anybody's occupancy, they are proper for nobody's. Even that is an understatement. They are not built to live in at all, but to make profit out of. And any effective utility they may posses is confined to this major purpose.

HOUSE OF MR. ALLEN DALE, HOLLYWOOD, CALIFORNIA
John Roth, Architect

Students of abnormal psychology may be interested in puzzling out why these buildings thrive. I suppose their chief claim on the public is the one quality which must hopelessly discredit them with the sensitive and the cultivated; namely, their frantic striving for effect. They claw the air in their indecent eagerness. But, since the average man's life is a striving for effect, his architecture may at least be credited with the merit of expressing him. One thing is certain. These blatant trivialities are the chief obstacle to the development of a rational and healthy public taste in building. People who can tolerate them are verily already in a parlous state; those who enjoy them must be mourned as among the aesthetically and intellectually damned.

But they also present another problem worthy of psychological investigation, entirely beyond the popularity of their hopeless aesthetic ineptitude. Why should there be so many people buying houses made

simply to sell, that some people devote their entire activity merely to building houses to be sold? It is anybody's privilege to build his own house just as he wants it (provided he knows how he wants it). No man can believe that any builder's house has been designed specifically to satisfy his personal tastes and requirements. No man not gifted with a most fatuous mentality can believe that it is as well built as he would himself construct it. And no man not similarly endowed can believe that the real estate operator has arranged prices with any uncertainty as to his own profit. Only the lapses in construction remain covered (at least until after the sale) and the profit is not itemized in the bill. The only advantages the speculator has over the average man are, (1) his experience in building; (2) the slight edge on material and construction costs due to mass production; (3) the absence of a proper architect's fee; (4) his freedom from conscientious scruples. It is highly ques-

HOUSE OF MR. H. W. BUCKINGHAM, PASADENA
J. H. Woodworth & Sons, Architects

tionable if the additional cost to the average man conducting his own building operations, due to his disadvantage on all these four items combined, could more than exceed the sum added on by an enterprising speculator as his own profit. In other words, for the trouble of undertaking and attending to the work, a man might have his house designed as he wants it and better built. Why should he continue to pay profits to the speculator? I have not, of course, yet told the complete story. There remains a fifth advantage possessed by the speculator; an abundance of easy and cheap credit. And this financial advantage is perhaps his crucial one. If the average man were able to get the money, the builder's occupation might be gone. Perhaps, if we go back far enough, the approach to a healthy public attitude toward architecture (and life) may be found to be along an economic road.

*Photographs of Mr. George Washington Smith's work by S. Walter Collinge.

HOUSE OF MR. IRVING WRIGHT, SANTA BARBARA
GEORGE WASHINGTON SMITH, ARCHITECT

(See plans page 66)

(See plans page 66)

HOUSE OF MR. IRVING WRIGHT, SANTA BARBARA
GEORGE WASHINGTON SMITH, ARCHITECT

DINING ROOM, HOUSE OF MR. IRVING WRIGHT, SANTA BARBARA
GEORGE WASHINGTON SMITH,
ARCHITECT

(See plans page 66)

HOUSE OF MISS M. BURES, SANTA BARBARA
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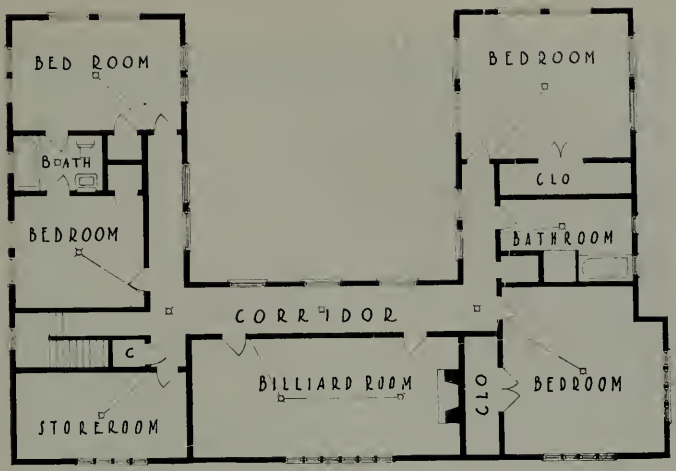
SECOND FLOOR PLAN

FIRST FLOOR PLAN, HOUSE OF MR. IRVING WRIGHT
George Washington Smith, Architect

(See pages 62-63-64)



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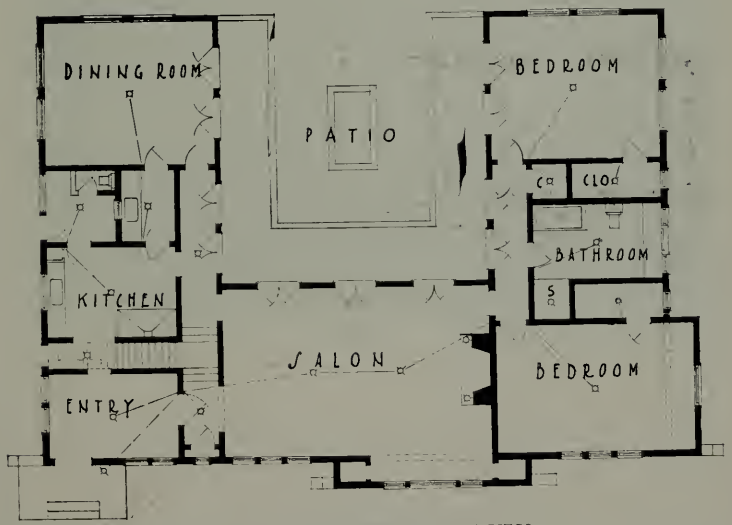

FIRST FLOOR PLAN, HOUSE AT SAN DIEGO
W. H. Wheeler, Architect

(See pages 58-59)

HOUSE OF MR. CHARLES BOLDT, BEVERLY HILLS
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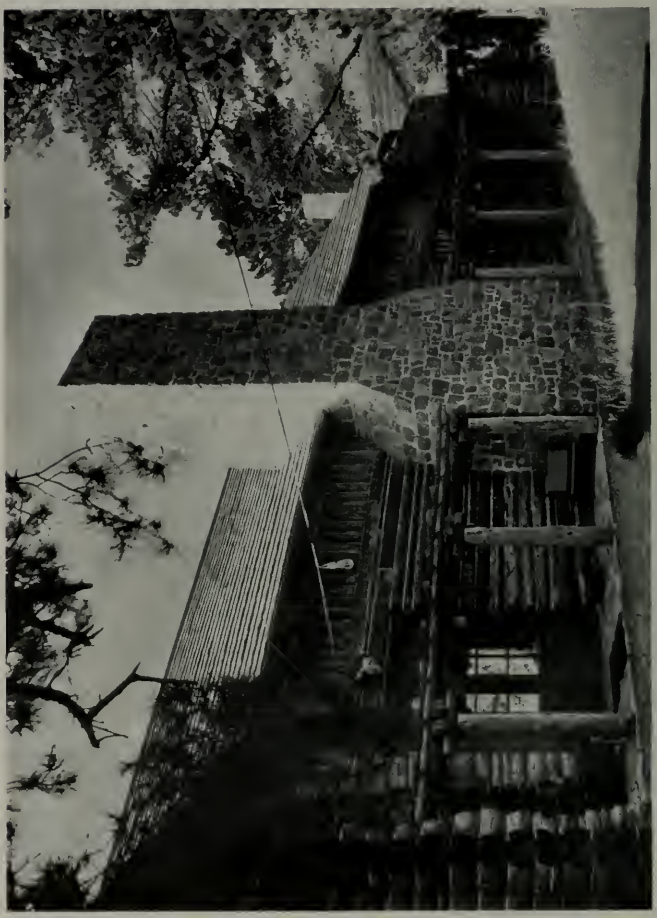

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LEWIS P. HOBART, ARCHITECT

HOUSE OF MR. A. K. MACOMBER, PEBBLE BEACH
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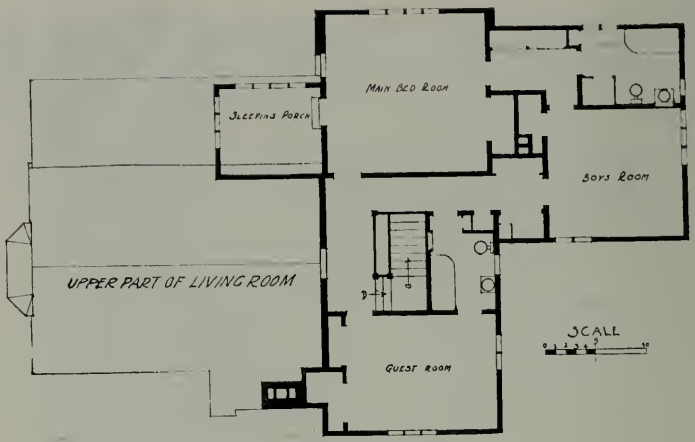
HOUSE OF MR. P. T. BURTIS, SACRAMENTO
DEAN & DEAN, ARCHITECTS

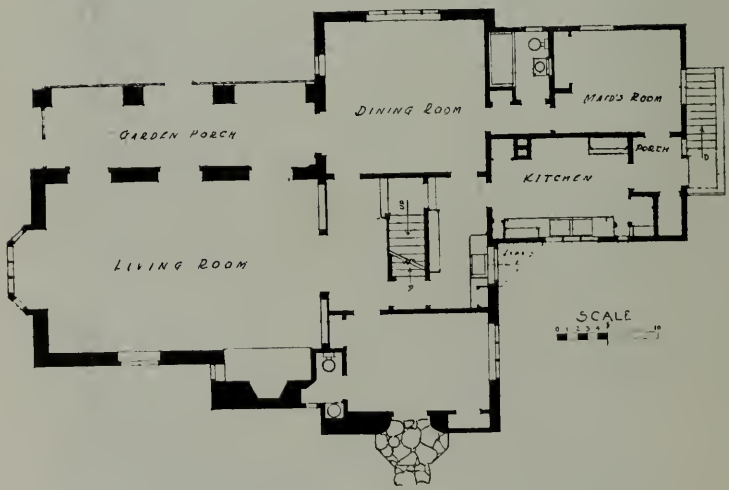
(See plans, page 74)

(See plans, page 74)

HOUSE OF MR. P. T. BURTIS, SACRAMENTO
DEAN & DEAN, ARCHITECTS

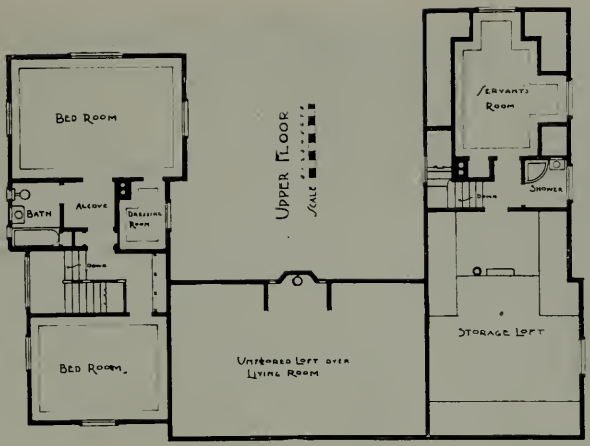


SECOND FLOOR PLAN

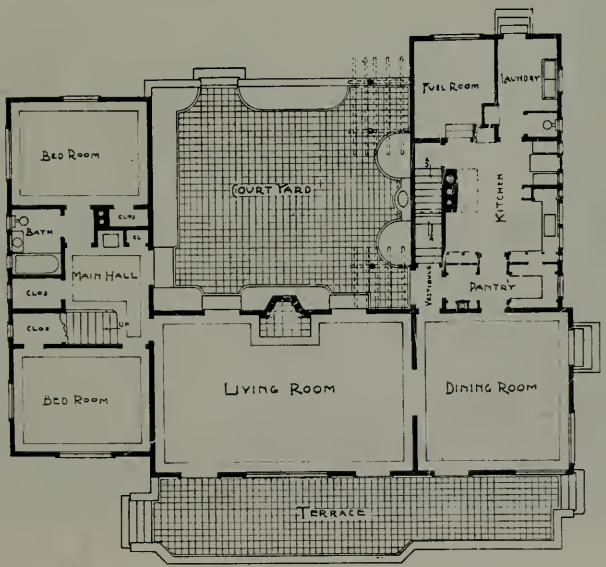


FIRST FLOOR PLAN, HOUSE OF MR. P. T. BURTIS
Dean & Dean, Architects

(See pages 72-73)



SECOND FLOOR PLAN



FIRST FLOOR PLAN, HOUSE AT CORRALITOS
Fowler Mallett, Designer

(See pages 76-77)

HOUSE AT CORRALITOS, CALIFORNIA
FOWLER MALLETT, DESIGNER

(See plans, page 75)

(See plans, page 75)

HOUSE AT CORRALITOS, CALIFORNIA
FOWLER MALLETT, DESIGNER

HOUSE OF DR. W. HUMES ROBERTS, PASADENA, CALIFORNIA
MYRON HUNT, ARCHITECT MYRON HUNT & H. C. CHAMBERS

HOUSE OF DR. W. HUMES ROBERTS, PASADENA, CALIFORNIA
MYRON HUNT, ARCHITECT MYRON HUNT & H. C. CHAMBERS

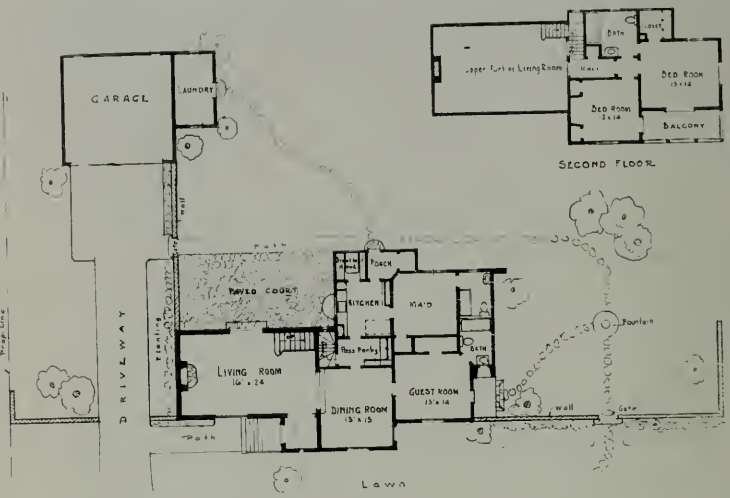
GARDEN, HOUSE OF DR. W. HUMES ROBERTS, PASADENA
MYRON HUNT, ARCHITECT MYRON HUNT & H. C. CHAMBERS

GARDEN, HOUSE OF DR. W. HUMES ROBERTS, PASADENA
MYRON HUNT, ARCHITECT MYRON HUNT & H. C. CHAMBERS

BEACH COTTAGE, ARCH BEACH, CALIFORNIA
MYRON HUNT, ARCHITECT MYRON HUNT & H. C. CHAMBERS

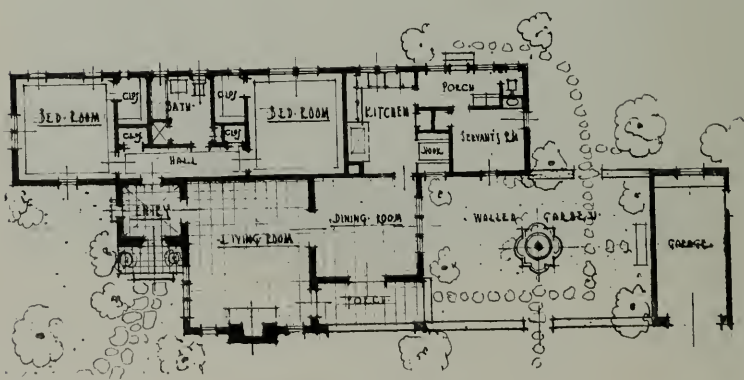
(See plans, page 84)

HOUSE OF MR. E. ALLEN TEST, PEBBLE BEACH
MILLER & WARNECKE, ARCHITECTS



PLANS, HOUSE OF MR. E. ALLEN TEST, PEBBLE BEACH
Miller & Warnecke, Architects

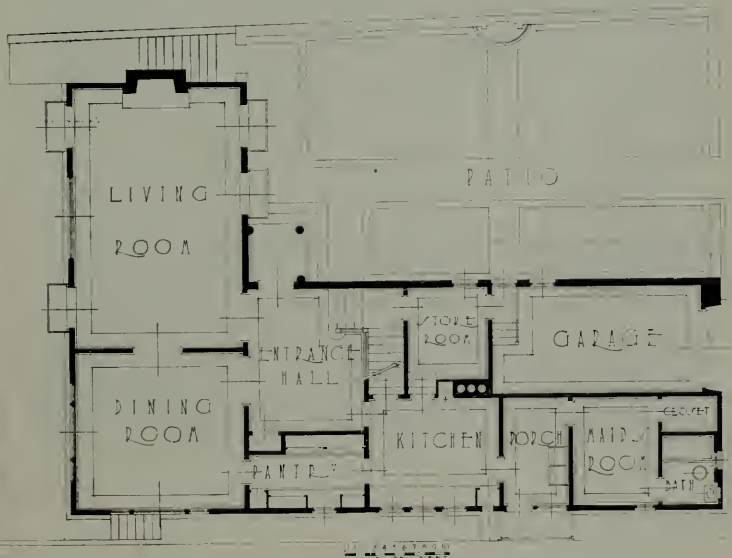
(See page 83)



PLAN OF BUNGALOW IN BURLINGAME, CALIFORNIA
H. C. Bauman, Architect

(See page 87)

SECOND FLOOR PLAN



FIRST FLOOR PLAN, HOUSE OF MR. JOHN BRICKELL, SAN FRANCISCO
Earle B. Bertz, Architect

(See page 88)

HOUSE OF MR. H. A. C. McPHAIL, LOS ANGELES
RUOFF AND MUNSON, ARCHITECTS

(See Plan, Page 84)

BUNGALOW AT BURLINGAME, CALIFORNIA
H. C. BAUMAN, ARCHITECT

(See Plan, Page 85)

HOUSE OF MR. JOHN BRICKELL, SAN FRANCISCO
EARLE B. BERTZ, ARCHITECT

HOUSE OF MR. HIGGINS, SAN FRANCISCO
EARLE B. BERTZ, ARCHITECT

HOUSE OF MR. HAMILTON WEEKS, PIEDMONT
W. H. Weeks, Architect

(See Plan, Page 92)

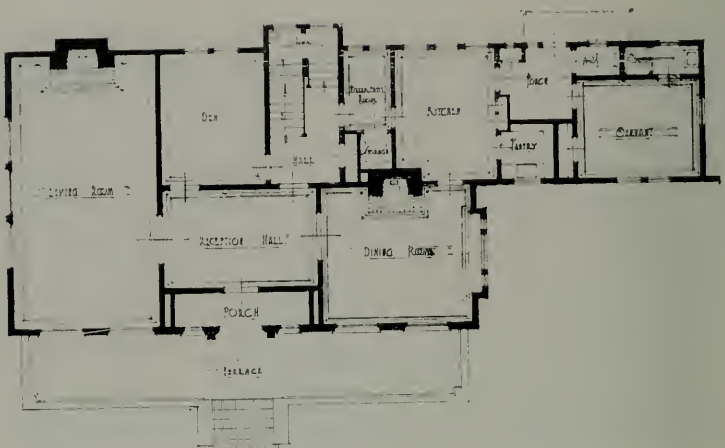
HOUSE OF MR. W. H. WEEKS, PIEDMONT
W. H. Weeks, Architect

(See Plan, Page 92)

HOUSE IN BERKELEY, CALIFORNIA
W. H. Ratcliff, Jr., Architect

(See Plan, Page 93)

HOUSE OF MR. A. L. HART, SAN JOSE, CALIFORNIA
Binder & Curtis, Architects



FIRST FLOOR PLAN, HOUSE OF MR. W. H. WEEKS, PIEDMONT
W. H. Weeks, Architect

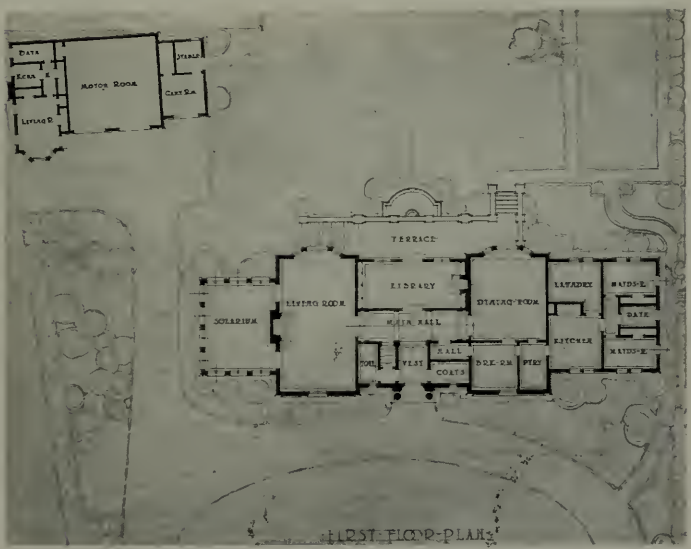
(See page 90)

PLAN, HOUSE OF MR. HAMILTON WEEKS, PIEDMONT
W. H. Weeks, Architect

(See page 90)

PLAN, HOUSE OF COLONEL JOHN HUDSON POOLE, PEBBLE BEACH
Lewis P. Hobart, Architect

(See pages 94-95)



FIRST FLOOR PLAN, HOUSE IN BERKELEY, CALIFORNIA
W. H. Ratcliff, Jr., Architect

(See page 91)

(See Plan, Page 93)

COURT, HOUSE OF COLONEL JOHN HUDSON POOLE, PEBBLE BEACH
LEWIS P. HOBART, ARCHITECT

(See Plan, Page 93)

COURT, HOUSE OF COLONEL JOHN HUDSON POOLE, PEBBLE BEACH
LEWIS P. HOBART, ARCHITECT

HOUSE OF MRS. ALMA WAGNER, LOS ANGELES
ARTHUR S. HEINEMAN, ARCHITECT

HOUSE OF MR. E. J. CHEESEWRIGHT, PASADENA
DESIGNED BY E. J. CHEESEWRIGHT STUDIOS

HOUSE AT OJAI, CALIFORNIA
GEORGE WASHINGTON SMITH, ARCHITECT

HOUSE AT OJAI, CALIFORNIA
GEORGE WASHINGTON SMITH, ARCHITECT

HOUSE OF MR. R. C. WARNER, PIEDMONT, CALIFORNIA
C. W. McCALL AND C. T. DAVIS, ASSOCIATE ARCHITECTS

HOUSE OF MR. N. T. BRACKEN, OAKLAND, CALIFORNIA
C. W. McCALL AND C. T. DAVIS, ASSOCIATE ARCHITECTS

HOUSE OF MR. BERNARD SILVERSTEIN, OAKLAND
MORROW AND GARREN, ARCHITECTS

HOUSE OF MR. WM. A. POWELL, BERKELEY
MORROW AND GARREN, ARCHITECTS

HOUSE OF MR. CHARLES LUX LEWIS, SAN FRANCISCO
JOHN K. BRANNER, ARCHITECT

ERNEST IRVING FREESE · ARCHITECT
4675 HOLLYWOOD BLVD.
LOS ANGELES, CAL.

RESIDENCE OF
MR. WILLIAM KING
BRENTWOOD PARK
LOS ANGELES, CAL.

RESIDENCE OF MR. WM. KING, LOS ANGELES
ERNEST IRVING FREESE, ARCHITECT

HOUSE OF CAPTAIN EDWARD McCAULEY, JR., HILLSBOROUGH
JOHN K. BRANNER, ARCHITECT

HOUSE OF MR. D. L. JAMES, CARMEL HIGHLANDS, CALIFORNIA
C. Sumner Greene, Architect

Roof Tile for Residences*

By CLIFFORD C. PYLE

THE selection of a roofing material for the home is a problem that has confronted mankind since the very beginning of civilization. We do not need a great deal of imagination to picture in our minds these ancient roofs.

We know that man first lived in homes cut or dug in the earth, with a natural dirt roof, and later, as he became more intelligent, he timbered the walls and the roof of his home or dug-out with a kind of revetment made of poles interwoven with smaller sticks and grass. This revetment was quite wonderful and it really did keep the large pieces of dirt that often came down from falling on his head. But it did not keep the water out during the rainy season. Frequently the whole roof of his house caved in and this taught him to build more substantially.

We even find him hewing homes in solid rocks. These homes and roofs were, of course, by far superior to the dirt roofed dug-outs. But even these rock roofed houses did not keep out the water; there were always cracks and fissures through which it poured.

He next tried building on the surface of the earth, using for the walls sticks, grass and leaves plastered over with mud. The roofs of these houses were built by laying across the walls long poles on which were fitted bunches of grass. This also was plastered heavily with mud. The flat mud roof did not shed water and someone conceived the idea of tilting the roof so that the water ran off instead of running through.

In time it was discovered that certain muds dried very hard in the sun, and if worked into definite shapes were easy to use for building. Crude chunks were modeled and fashioned for the walls, and later the

*Illustrations accompanying this article are of houses roofed with terra cotta tile.

more artistic races went further and shaped thin pieces of this mud for the roof. It was probably several centuries later that these same races discovered, quite by accident, that when these pieces were placed in a hot fire for some time they became as hard as stone. Throughout the entire old world fragments of these early modeled and shaped bits of clay have been found. An astonishing thing is that the oldest known type of these modeled fragments is the most common shape of terra cotta roof tile used on our modern buildings today.

We have pieces of these old tile three and four thousand years old; some from Asia Minor and some even older than these from China. The Chinese are considered by some to be the originators of roof tile and other terra cotta art objects, and it is highly probable that they really were.

However, to the Chinese and the Greeks, especially to the latter,

HOUSE OF MR. GEORGE COOK, PEBBLE BEACH, CALIFORNIA
Pierpont and Walter S. Davis, Architects

is due the credit of bringing this wonderful art to a plane never before attained by any of the older and less civilized races. Enough of these tile have been found in different parts of Europe to show that they were in the early centuries used on all types of buildings, indicating the adaptability of roof tile to all styles of architecture. Some of the terra cotta roofs of Europe are intact today after centuries of exposure to the most severe climatic conditions. Even the oldest of these roofs are beautiful, and it is partly because in those days the roof was planned with and as part of the house and surrounding grounds, it should be so planned today. The roof is the last thing that goes on the house—the finishing touch to a beautiful picture, the artistic accent. It should be a bright but harmonious spot made up of a variety of pleasing, blended tones, and by all means not a painted, uniform, hard, ugly surface. Usually the beautiful terra cotta tile roofs will be found on houses with walls of light or neutral tones of color. The walls of a house upon which roof tile will be placed should be or suggest the com-

plimentary color of the glowing rose colored roof. Where the house is surrounded by large and spacious grounds, covered with green trees and grass, nature has supplied this complimentary or cooler color and the roof will look more brilliant and more beautiful than it would without the large expanse of green.

If the building is to be of brick, great care should be taken in the selection of the color, light and neutral tones should be chosen. Natural clay offers a very wide range of color, and there could be no possible excuse for placing a bright red roof on a common red brick building. The color of the tile would become lifeless and the real effect of the roof lost.

Cement is often used for walls, the natural color harmonizing well with the beautiful rose toned terra cotta roof-tile. If stucco or similar material is used, light greenish greys and creams will be the most satis-

HOUSE OF MAJOR MAX FLEISCHMANN, MONTECITO, CALIFORNIA
Reginald D. Johnson, Architect

factory tones. The better values can be obtained by adding a very small amount of green to the light greys, just enough to cool the color. Some of the most successful tile roofs will be found on these cooler toned stucco houses.

The better grades of roof tile are burned at a very high temperature in an open kiln and they are known as natural kiln-run tile. There is a wide though harmonious variation in color due to the fact that the modern kilns are equipped with air pressure oil or gas burners, and the flames hit some of the tile, very nearly hit others, and some they do not touch. They are more beautiful in color than the old world tile, harder burned, not so porous and naturally more durable. The only thing in which the old world tile seemed to surpass the new machine-made tile was in a feeling of hand-madeness, a feeling that it seemed only human hands could impart to tile. But now we are glad to know that this human touch has been attained by the better terra cotta roof tile manufacturer.

HOUSE OF MALCOLM McNAUGHTEN, LA CAÑADA, CALIFORNIA
Reginald D. Johnson, Architect

GATE LODGE, BEN R. MEYER ESTATE, BEVERLY HILLS
Johnson, Kaufmann & Coate, Architects

The Price of Brickwork

It costs today in California approximately 3c. to lay a brick in a wall

By GEORGE S. SUMMERELL, Secretary
California Common Brick Manufacturers Association

THERE is perhaps no subject in the building industry about which there has in the past been more misinformation and less exactness than in the matter of the cost of brickwork. The need for more definite information regarding the cost of brick, as compared with other types of construction, has been more keenly felt since the war with the greatly increased demand for brick construction.

One of the prime factors that lead to the organization last year of the California Common Brick Manufacturers Association was the desire on the part of the brick industry to provide a clearing house through which the varying costs of brickwork in the different parts of the state could be studied. The brick manufacturers sought to make available to the building industry, accurate, helpful, comparative information regarding this ancient building material.

The building trades and professions will be vitally interested in the results of a statewide survey of the cost of brickwork that is still being made by this organization. The progress of this investigation has already disclosed some very significant facts regarding the cost of laying brick in the wall.

There are today in California something less than thirty manufacturers of common brick. The cost of common run-of-kiln brick ranges from $14 to $18 and upward. The figure of $15.50 has been found to fairly represent the average cost throughout the state for a thousand common brick.

The item of labor in the cost of brickwork is the one about which there has been least definiteness. During the readjustment period immediately following the war, the bricklayer was sometimes facetiously pictured as donning his silk shirt at nine in the morning, riding to the job in his Rolls Royce and laying a hundred or two of brick before going down to dress for dinner. This same comic-paper exaggeration was similarly applied to all skilled labor, just as it was to our swivel-chair officers, our ship-yard workers, our dollar-a-year men and our profiteers. It was probably no truer of the bricklayer than of any of the rest.

Today in California the bricklayer is averaging about $10 a day. He is laying considerably better than a thousand brick in eight hours. In San Francisco the bricklayer receives $11 a day; in Los Angeles, $10; in other parts of the state, less. One man will lay 900 brick a day on an 8-inch curtain wall where reinforcing rods are used. On a 13-inch wall where there are no reinforcing rods to contend with, one man will lay 1500 brick per day. These figures are being duplicated and exceeded every day on scores of jobs throughout the state.

To the cost of brick and labor must be added a charge for mortar. One yard of mortar is required for 1200 brick, two sacks of cement being required for every thousand laid up. The cost of mortar in laying a thousand brick may fairly be figured at $3.75.

Reducing the foregoing figures to a cost per thousand basis, we have brick at $15.50, labor at $15.49 and mortar at $3.75, making a total of $34.74 for a thousand brick in the wall—less than 3½ cents apiece. These figures represent the highest cost among the scores of jobs that came under observation in this survey. In approximately half of the cases the average cost per brick in the wall was 3 cents. In many cases, even in Los Angeles, the cost runs as low as 2.8 cents per laid brick.

The figures presented are from official sources and are of unquestioned accuracy. No effort was spared to arrive at conclusions which would represent the true situation. The figures given above are from Los Angeles and San Francisco, where costs are appreciably higher than elsewhere in the state.

In San Francisco, figures obtained by the survey show that brickwork there is costing $30 a thousand or only 3 cents a brick in the wall. This amount includes brick, mortar, labor and scaffolding. In San Francisco the cost per cubic foot of brickwork is still more favorable because the brick used is slightly larger in size than that obtainable elsewhere. In using San Francisco brick, the mason figures 6 bricks for each square foot of 4-inch wall, 12 bricks for each square foot of 8-inch wall, 18 per square foot of 13-inch wall and 24 per square foot of 17-inch wall.

To represent the true situation in the Los Angeles region, a typical case may be cited. The H. M. Baruch Construction Company of that city recently completed the erection of the De Luxe Laundry building at Slauson avenue, near Hoover street. On this work 271,000 common brick were used at a total cost in the wall of $3,643.00, less than 3½ cents per laid brick.

Every day in Los Angeles contracts are being let for brickwork at $28 a thousand. Some contractors report that they have frequently during recent months lost important jobs because their $28 estimates were underbid. Construction at these prices is, of course, largely on warehouses and garage buildings presenting large unbroken walls with few openings.

From the beginning of time builders have agreed on the virtues of brick, its beauty, its permanence, its flexibility and its many indispensable advantages in sound construction. In California it is coming to be regarded as uniquely suited to the conditions of life and climate. The public, as well as the building professions, are learning that brick in the wall at three cents apiece costs no more than other building materials, less desirable and less enduring.

* * * *

Putting the Geysers to Work

A DYE works in Iceland linked up its factory with water pipes direct from the hot springs, and after using the hot water in the color processes and for heating the factory and the workmen's homes, conducted it through underground pipes laid in fields, which as a result yielded three times as much produce as neighboring fields not so equipped. Although from time immemorial the Icelanders have been familiar with geysers, only recently have their industrial uses been seriously considered. A project now is on foot to supply Reykjavik with hot water for heating, bathing and washing purposes from one of the neighboring hot springs.

* * * *

A British View of High Buildings

A member of the London County Council has recorded the opinion that "skyscrapers will be cursed by generations to come."

The Philadelphia "Public Ledger" says—"The Briton overlooks the fact that civilization is looking and climbing upward. Traffic will be lifted above the street level. For all who are denied light and air by the erection of new high buildings there are many who are given a range of vision and a supply of ozone they never knew before. The earliest denunciation of tall buildings sounds prehistoric now. The width of streets has as much to do with the problem as the height of buildings."

CANADA VISTA, ESTATE OF MRS. MERLE B. MOON, SARATOGA, CALIF.
Emerson Knight, Landscape Architect

Gardens, Hidden and Revealed

By EMERSON KNIGHT, Landscape Architect

MEN or women with breadth of vision, keenness of imagination and refinement of feeling,—those indeed who have ideals and daring dreams which they are steadily moulding into realities, cherish gardens in their thought.

I firmly believe that almost everyone has some garden plot in his mind even though it may be diminutive or greatly in need of weeding, nourishment and the refreshment or rejuvenation that stimulates clean new growth. The contemplation of beauty in Nature and the elements, the subtler, finer phases of human contact, the doing of kind deeds, an appreciation of the creative arts, the fascination for worthy books that inspire—such as the biographies of souls born to heroic solitude or poetry of the loftier vein,—these will all tend to promote the gardens in our minds.

My conviction is that if we realize gardens of delight within, we cannot help sharing their beauty and gladness with our fellow men. We would invite congenial spirits into our gardens of fancy, where grace is lent by sun and shadow on retired nooks, the play of fountains or the placidity of pools. It is natural for man to give freely of his best. Thus, if we emanate the fragrance, color and sweetness of our inner gardens, we shall find ourselves capable of creating more visible modes of growth, because all that we touch with our hands and hearts will reflect our impulse.

The architect builds the garden of his conception in forms and textures of stone and wood, of brick and tile, of wrought iron and bronze; and when his workmanship, expressing nobility of scale, is married to

LITTLE BROOK FARM, ESTATE OF MAX M. COHN, LOS GATOS
EMERSON KNIGHT, LANDSCAPE ARCHITECT

Norman La Plant, Sculptor.

LITTLE BROOK FARM, ESTATE OF MAX M. COHN, LOS GATOS
EMERSON KNIGHT, LANDSCAPE ARCHITECT

CANADA VISTA, ESTATE OF MRS. MERLE B. MOON, SARATOGA
Emerson Knight, Landscape Architect

CANADA VISTA, ESTATE OF MRS. MERLE B. MOON, SARATOGA
Emerson Knight, Landscape Architect

true taste in the Hellenic virtues of breadth, centrality, with blitheness and repose,—the result will revive our esthetic natures in quiet pleasure.

The sculptor unfolds the character of a tree in masculine form or the blossoming innocence of a rare budding flower in a girl or woman—such is the magic of his feeling hand. The painter, through his reverence for nature, recreates the color pageant of hillsides, the wistful charm of lakes, the depths of cool forests, the vast glow of the desert, the symphony of the sea or the lone watches of sentinel trees on bleak and rugged coasts. He fashions with his hands, the garden of his thoughts.

The composer of music reveals warm tone pictures, charged with soul stirring elements while his close brother, the musician, interprets and renders his works in rebirth, sometimes with an added light, a newer meaning. The singer, in union with both, vibrates with human feeling through chanting hymns of worship, liberating folk songs or singing the classics.

Dancing has a charm as compelling as it is illusive. In its pure Attic examples it often discloses the recurrence of flower and tree forms, rare combinations of rhythmic movement, colorfulness, light and shade —that may express the natural abandon and rich imagination which are blended in this living art. The drama reproduces the heroic moments or those salted by the saving sense of humor in lives great or humble that have been or might be. We are edified both in tragedy and comedy because of the fecundity and sincerity of the author or the keen histrionic ability of the actor who creates a great role.

The poet, with thought woven into an exquisite fabric of words, words that are mediums of perfume and color on the printed page, unveils for us delicate traceries of harmony, vistas of pure beauty, deep emotional moods, and proves the glory of his own soul's garden.

The landscape architect is aware of a close kinship with all of his brothers in art for whom he has sympathy and devotion. He feels that instinctively he has made the qualities of these brothers a veritable part of his own being. He sings for them and works hand in hand with them. With living plant forms, rich in color, texture and fragrance he creates pictures. As time passes, these should increase in loveliness, in significance of order and balance, in harmony of color, and unity of composition. So, in designing gardens the landscape architect hopes to transplant the dreams of his mind to the earth's surface, wheresoever men have homes, recreation or civic aspirations. When we gain an understanding of his aims, we may realize the nobility of a profession that should mean as much for the happiness and well being of the people, as any creative art. * * * *

Fireplaces in the Home

No home should be built without a fireplace if it be possible to place one therein. An open blazing fire is a comfort and a pleasant thing to look upon; but the greatest benefit that it bestows is that of ventilation.

A house without a fireplace has but little chance for ventilation, as the general tendency of the occupants is to keep the windows closed; speaking of winter conditions, as it stands to reason, the ordinary house is sufficiently open and ventilated in the summer time. In the winter much illness results from our houses being closed up too much of the time.

In the Colonial days of our history nearly every room in the house was equipped with a fireplace; in fact, the fireplace was the only means of heating in those days. As a result every room in the house was well ventilated.—Washington State Architect.

A Plea for Fireproof Homes

By HOWARD FROST

THE necessity of building our homes of fire resisting materials becomes more apparent every day as we read in the newspapers of the ravages of the fire demon. The average annual loss for the last forty-eight years is one hundred and seventy-one million dollars! This in itself is enormous, but more appalling is the fact that the annual loss is steadily increasing, the loss for 1922 being one hundred and ninety-six million dollars above the average. In 1918 the loss by fire was equal to the value of all homes built during that year. There is no doubt but that a large proportion of this enormous waste could have been eliminated had the owners, whose buildings were laid low by the ravages of fire, stopped to consider the all around value of fire proof, permanent building material.

According to expert authorities, there is no longer any need of building homes of flimsy construction. The cost of fireproof materials is now so low that the average home builder can afford to build for permanence. Hollow building tile, for example, has proved its fire resisting qualities time and again. When it became known that steel beams could not withstand the heat generated at an ordinary fire, hollow tile was called upon to act in this capacity. That it stood the test was shown in hundreds of large conflagrations, where the floors and walls were totally demolished, but the tile protected steel was untouched. Its fire resisting property paved the way to a larger usage. Here was a material that effectively protected steel beams; why could it not be used to protect the entire building? And so the hollow building tile, based on an unquestionable reputation, began to be utilized in the construction of partitions, floors, walls and foundations. Today it is universally used in the construction of homes, schools, factories, warehouses, hospitals, office, club buildings, in which it successfully fulfills every requirement of a permanent material at minimum cost and depreciation.

We have been asked why it is that hollow tile can withstand a higher temperature than any other building material. It is simply the quality of clay, burned in the making at a temperature exceeding any it is ever subjected to in an ordinary fire. The use of burned clay is not new as it was used in ancient times by various tribes who made crude bricks from clay and burned them in the sun, but it remained for modern times to perfect a way of burning the clay at so high a temperature that the action of an ordinary fire could not affect it. At the temperature developed in a burning building, steel will twist and bend, surface clay bricks will crumble, glass will melt and concrete disintegrate, but hollow tile, having gone through a higher temperature in the making, can easily withstand the heat.

Insurance statistics show that the origin of over seventy-five per cent of residential fires start in the basement. Where the first floor is constructed of combustible material it is difficult to confine the fire, which soon eats its way into the room above causing a material damage. By using hollow tile in the floor construction, the basement fire is easily confined to its point of origin and the minimum of loss is sustained.

The fire proofing quality is not the only outstanding feature of hollow building tile. The voids in the tile when constructed into a wall, floor or partition, enable several layers of dead air to separate the interior of the wall from the outside. It is a known fact that dead air is the best insulator to the transmission of heat and cold, so that the wall of hollow tile will keep the home cooler in summer and warmer in winter

and dry at all times. Tests have determined that a hollow tile home maintained an interior temperature averaging 12 degrees below the outside readings during the two hottest months of the year, while the winter following showed a 10 per cent saving in coal.

Hollow tile walls can be stuccoed or veneered with brick. Stucco applied to hollow tile will not pull, chip or crack, as the small absorption of the tile draws in the cement mixture and aided by the deep scoring, results in a perfect bond. In addition, hollow tile walls do not sag, shrink or bulge. The home built of this material, at a cost of but 5 per cent above frame construction, will stand forever, free from the expense of painting and repairing, cooler in summer and warmer in winter, dry and sanitary, vermin proof and fireproof.

* * * *

Homes

THERE are in these United States two distinct ideals of home. Developing in New England and in the old South, these ideals have been carried across the continent, mingling as they married and adapting themselves to conditions met with in pioneer life.

Here in California where all ideals meet and wage war and expand or go down to oblivion, we have a fine view of the conflict and opportunity to see the evolution which comes from a survival of the fittest to survive.

To the New Englander home is a place to which one retires to gain rest and strength for daily duties; to the Southerner, home is the place to which one brings all that is best in one's world.

From his home, as his citadel, the New Englander has gone forth, and still goes to conquer the wilderness or the world for himself and for humanity.

In California we have no traditions—excepting those we brought with us or our immediate forebears did. And yet the making of homes is at present our main business. From the New Englander we learn to organize the community in which we live, that our homes may be surrounded with quiet and peace and the state preserved.

From our glimpses of the old Southern home which we catch here and there in a great movie pageant or in our art studies, we gain a vision of a focus for all our desires to make others happy and to share our native hospitality with our little world of friends.

These two ideals working within our efforts to make homes, determine the arrangement and size of the rooms — the placing of the furniture, the hours of work and play. Combined in the hearts of Californians the inherited instincts for home are drawn from north, south and the trying pioneer life of the west and are evolving a generous and efficient home life in California.—California Southland.

* * * *

Better Homes Campaign in May

THE third national campaign for Better Homes in America will be conducted this year from May 11 to 18. Secretary of Commerce, Herbert Hoover, is president of the central organization.

The aims of the campaign for Better Homes in America are to show the advantages of thrift for home ownership, to overcome the shortage of homes in this country, estimated at 800,000; to strengthen home life and make it attractive, to encourage homemakers, to improve the home environment, to stimulate sensible purchasing for home improvement, and to mobilize community pride for a common object—pride of home.

THE
Architect and Engineer
Incorporated
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Vol. LXXVII APRIL, '24 No. 1

NO greater contribution could be made to assure the stability of the Nation, and the advancement of its ideals, than to make it a Nation of home-owning families. All the instrumentalities, which have been devised to contribute toward this end, are deserving of encouragement.

—Calvin Coolidge.

GOOD WORK IN HOME DESIGNING

It is a fine compliment to California architects when we say that in the twenty years of continuous publication, this magazine has never had so much good material from which to make a selection for its Annual House Number. It has been no easy task to choose from so many excellent pictures the necessarily limited number for publication in the current issue. Enough material has been held over to make another House Number equally as interesting as this one, and these pictures will be shown later on in the year. Several of the regular departments have been omitted or reduced in size this month to permit of a more liberal showing of houses. Architects seeking new ideas in home design will find in this month's presentation material that is somewhat better than the average.

GARAGES FOR OFFICE BUILDINGS

That the time is at hand when architects who plan large office buildings and department stores must provide automobile parking accommodations for tenants and shoppers, no one will question if he will take a look around him in the down-town sections of our big cities. Traffic congestion has become so acute that every day, it would seem, the parking sections are placed further and further away from the business centers. Business men must walk blocks from their parked machines to their offices and shoppers have the same difficulty reaching the department stores. There is already talk of several large public garages in the down-town sections of San Francisco and Los Angeles to take care of business men's machines, but to place these buildings where they will be a real accommodation means the utilization of valuable land that is now occupied by office buildings bringing in a good income. It is questionable if owners will be able to derive sufficient revenue from parking fees to make a proposition of this kind pay.

A plan that seems most feasible and which architects have already commenced to adopt, is to provide parking space in the basements of the big office buildings, this to be used exclusively by the tenants whose rent is proportioned to take care of the expense of maintaining the garage. Speaking of this new method for relieving the situation, Mr. A. A. Brown, construction engineer of the Matson building on lower Market street, San Francisco, says:

SAN FRANCISCO
PUBLIC LIBRARY

"The Matson is the first large building in San Francisco to provide space in the basement for the parking of tenants' automobiles. The difficulty of finding parking space has made this feature a very attractive one to the tenants, who can now drive into the basement, park their cars and take the elevators from the basement to the floors upon which their offices are located. A room with telephone connection adjoins the garage and is fitted out as lounging quarters for chauffeurs. There is space in the basement to park forty automobiles."

HOTEL GUEST ROOMS POORLY LIGHTED

At last some one has come forward with a vigorous criticism of lighting fixtures and their placement in hotel guest rooms. Joseph Cummings Chase, in an article on "Arranging Bed Room Furniture," in Hotel Management, does not mince his words when he proclaims the lighting equipment of the average small hotel guest room "an abomination and a crime." Mr. Chase goes on to say, and with considerable truth, too:

"Consisting as it usually does, of a single electric light bulb suspended from the center of the ceiling, it is fit for only one purpose—to furnish illumination for a poker game in which all the players sit around a table in the center of the room and wear their hats well down over their eyes!"

It should be realized that no room with a single light can appear home-like. If a center light from the ceiling must be used, it should be properly shaded, and there should be additional wall or floor plugs for connecting a table lamp or a high standing floor lamp. The improvement in the appearance of a room by the addition of these extra lights can be appreciated by those who have had experience trying to be comfortable in some of our hotel guest rooms. The expense of having extra plugs installed when building or renovating is really trivial, if one considers the greatly increased attractiveness of the room and the guest's comfort, and this fact should be kept in mind by architects who have occasion to supervise these improvements. The plugs should, if possible, provide for a lamp at either side of the bureau, one at the desk or writing table, and one at the head of the bed. The closet or wardrobe should likewise be illuminated.

COST OF BRICKWORK IN CALIFORNIA

On another page of this issue appears an article which the editor is glad to have an opportunity to publish. It shows that the average cost of brickwork in California is approximately 3 cents each for every brick placed in the wall, instead of 5 cents per brick, as was erroneously reported in a previous issue of this magazine. This information, and the discussion accompanying it, coming from authoritative sources, will be received with wide interest by the building industry and trades.

"THERE IS NO PROGRESS IN BUILDING"

At a dinner given last month by the New York Chapter of the American Institute of Architects at which members from Central New York, Connecticut, Philadelphia and New Jersey and a number of bankers, real estate and insurance men were the guests, Dr. Charles V. Paterno, in an interesting talk on "Speculative Building," declared that "there is no progress in building." Dr. Paterno, well-known as the builder of twelve-story apartment structures on Riverside Drive, went on to say that we laid bricks just as was done 500 years ago and that we plaster and paint in the same old fashions. He looked forward to the time when plastering and bricklaying will be done by machinery.

The experience and high standing of the speaker place his re-

(Concluded on page 122)

With the Architects

Building Reports and Personal Mention of Interest to the Profession

Passing of Theodore A. Eisen

Architect Theodore A. Eisen, dean of the profession in California, died March 8th at his home at Twenty-seventh and Figueroa streets, Los Angeles, of heart disease, aged 72 years. Mr. Eisen was one of the original members of Southern California Chapter, American Institute of Architects, of which he was past president.

Mr. Eisen was born in Cincinnati, Ohio, and in 1854 his parents came to California via the Isthmus of Panama and settled at San Francisco. His early architectural experience was in that city. He went to Los Angeles in 1885 to aid in designing the Los Angeles county court house and the Los Angeles orphan asylum in Boyle Heights. At that time he was associated with the late Wm. Curlett in the practice of architecture. For a number of years he practiced independently, and later his son, Percy A. Eisen, now a member of the firm of Walker & Eisen, was associated in the business.

Moves to Eugene, Oregon

Architect T. M. Gerow, formerly of Mann and Gerow of Hutchinson, Kansas, and a member of the Kansas Chapter, A. I. A., has moved to Eugene, Oregon, where he has opened an office for the practice of architecture in Room 221, Castle Theater building. Mr. Gerow has been a subscriber to The Architect and Engineer for a number of years. He would be pleased to receive catalogues and other literature from the building trades.

Enters Business for Himself

Mr. Joseph J. Rankin, formerly associated with Architect W. C. Hayes, First National Bank building, San Francisco, has opened an office for the practice of his profession in the Mechanics Institute building, 57 Post street, and is busy on plans for a large country house at Lake Tahoe for Mr. Walter S. Heller and for a house in St. Francis Wood, San Francisco, for Mr. H. S. Haines. Both houses will represent a total expenditure of $35,000.

Engineers' License Law

California should have an Engineers' license law. It is not too early to start the campaign.

Death of Edward G. Garden

News was received in San Francisco the latter part of March announcing the sudden death in Cleveland, Ohio, of Architect Edward G. Garden. Mr. Garden was at one time a member of the firm of Moran, Russell & Garden of St. Louis. Soon after the San Francisco fire, Mr. Garden moved to San Francisco and entered into architectural practice. During the war he was head of the drafting department of the Standard Oil Company in Richmond. After the war he again entered private practice and about two years ago Mr. Garden moved with his family to Cleveland, where he was engaged in architectural practice until his death.

Courses in Architecture

Of special interest are the courses in architecture that will be given this year at the summer session of the Carnegie Institute of Technology, in Pittsburgh. According to an announcement, the Department of Architecture in the College of Fine Arts, will give intensive six weeks' courses from June 16 to July 26 in Design, Outdoor Sketching, Descriptive Geometry, Shades and Shadows, and Perspective.

Partnership Formed

Messrs. John M. Mac Lachlan, C. E., and C. P. R. Short announce a partnership for the practice of architecture and structural engineering with offices at 403 Canon Drive, Beverly Hills. Building material and supply houses are invited to send catalogues and trade literature. Mr. Mac Lachlan recently moved to Beverly Hills from Santa Monica.

Locates in Portland

Architect Raymond W. Hatch, who has practiced architecture for ten years in Pendleton, Ore., has decided to move to Portland again where he previously lived. He planned the McLaughlin Union high school in Milton-Freewater, said to be one of the most up-to-date schools in Oregon.

City Architect Moves

Architect John Reid, Jr., announces the removal of his office from the First National Bank building, San Francisco, to 60 Sansome street.

Architects Change Addresses

The following architects, all subscribers to The Architect and Engineer, have announced the removal of their offices to new addresses:

Edwin D. Martin from 5 North La Salle street, Chicago, to 2015 Chemoya avenue, Los Angeles.

George Birnbach from 333 San Fernando building, to 726 H. W. Hellman building, Los Angeles.

Henry L. Gogerty from 239 East Broadway to 413 Marine Bank building, Long Beach.

William M. Clarke from 4072 West 7th street to 1522 Vista street, Los Angeles.

Johnson Bros. from Kingsburg to 209 Hord building, 1007 South Grand avenue, Los Angeles.

William J. Wilkinson from the American Bank building to 220 Howard avenue, Oakland.

Dean & Dean from the Library building to 1406 California State Life building, Sacramento.

C. E. Perry, Jr., from 211 Virginia street, Vallejo, to 2033 West 7th street, Los Angeles.

The May Architect and Engineer

It will doubtless be of interest to architects throughout the Coast to know that in May this magazine will publish some twenty or more full page plates of work in the office of Messrs. Lawrence & Holford of Portland, Oregon. Most of the pictures will consist of finely executed delineations by various members of the staff, including Hollis Johnston, Robert W. Turner, Louis C. Rosenberg and Truman Phillips. Another feature of the May Number will be a selection of photographs and drawings from the Architectural Exhibit held during the current month at the Bohemian Club, San Francisco.

Engagement Announced

Cards received by friends of Mr. Jas. Vollmar, San Francisco and Oakland architect, announce his engagement to Miss Ruth Elizabeth Cox, daughter of Mrs. Elizabeth Cox of Ocean View Drive, Oakland. The wedding is to take place the coming summer. Mr. Vollmar's recent architectural work has been in the office of Architect C. W. Mc Call of Oakland.

Going to Japan

Mr. P. A. Palmer, who has been connected with the building construction industry in San Francisco and the Bay section for a number of years, is to become construction manager for a company engaged in rebuilding the devastated sections of Japan. Mr. Palmer will be accompanied by Architect Willis C. Lowe, it is reported.

Personal

Architects Davies & Baume, 1010 Farmers & Merchants Bank building, Long Beach, have opened district drafting and supervising headquarters at 124 San Vicente boulevard, Santa Monica. Working drawings and all construction details for erecting the $2 500,000 Shoreham hotel-apartment building at Ocean avenue and San Vicente boulevard, Santa Monica, will be made in the Santa Monica office.

Architect Harry K. Vaughn has opened offices at 736 South Flower street, Los Angeles. Mr. Vaughn was formerly with Architect Carleton M. Winslow.

Messrs. Cramer, Bartlett & Wise, architectural engineers, have moved their offices from 430 Chapman building to 1918 W. Seventh street, Los Angeles.

Mr. George A. Christensen, until recently in charge of contracts and specifications for the Los Angeles harbor department, has been appointed chief building inspector in charge of the Long Beach building department under Mr. R. D. Van Alstine, city engineer and director of the public service department. Mr. Christensen assumed his new duties April 1, succeeding Mr. Vern D. Hedden, who will take up the practice of architecture.

Architect H. L. Gogerty has moved his business office and drafting department to 413 Marine Bank building, Long Beach.

Klamath River Bridge

The California Highway Commission will soon be ready to let a contract for the construction of a large concrete arch bridge over the Klamath river in Del Norte county, near the Oregon line. This bridge will cost perhaps $500,000 and will be one of the largest concrete arch bridges in the country. The magnitude of the structure, together with the difficulties involved in its construction, have called for the highest type of engineering skill in its design. It is to be known as the Douglas Memorial Bridge in honor of the late State Assemblyman Dr. G. H. Douglas of Crescent City, who worked for several years to secure an appropriation from the State for its construction. The bridge will consist of five 210-foot reinforced concrete open spandrel arches with concrete approaches at each end. These long fixed spans require enormous piers and the foundation material is such as to require the use of more than a thousand extra large wooden piles to support the piers and abutments.

Seattle Engineers Want Convention

A drive to obtain the national convention of the American Society of Engineers in 1926 for Seattle was launched by the Seattle section at a recent meeting. The Portland section of the society is cooperating to secure the convention for Seattle.

Field of the Contractor

Heating the Modern Home

Gas-Fired, Electrically Controlled Furnace Considered an Ideal Method

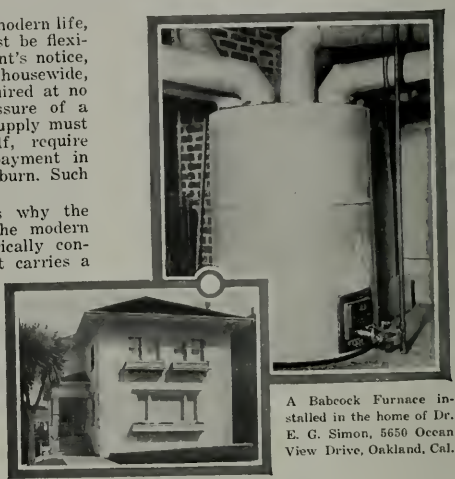
By C. B. BABCOCK

Manufacturer Babcock High Efficiency Gas Furnace

TO meet the conditions of modern life, ideal household heat must be flexible, available at a moment's notice, day or night. It must be housewide, uniform, and clean—and acquired at no greater effort than the pressure of a button. Moreover, the fuel supply must automatically replenish itself, require neither storage space nor payment in advance, and be economical to burn. Such heat is furnished by gas.

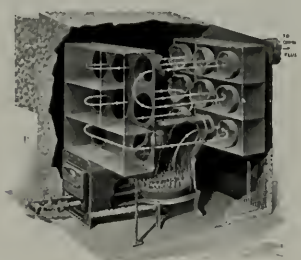
There are several reasons why the logical heating system for the modern home is the gas-fired, electrically controlled warm air furnace. It carries a minimum fire hazard; it is most convenient to operate; it is clean; and it burns the least wasteful fuel known to mankind.

In the variable climate of the Pacific Coast, where heat is required intermittently, the convenience of the gas furnace is especially apparent. Warmth that can be turned on or off as needed not only insures a uniformly pleasant temperature in changeable weather, but results in economy in many households where solid fuel furnaces would be left burning unnecessary hours to avoid the trouble and delay of starting them again.



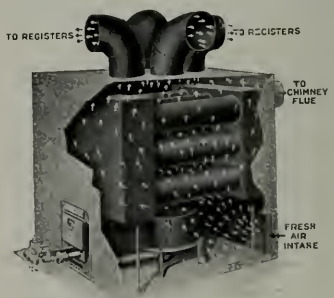
A Babcock Furnace installed in the home of Dr. E. G. Simon, 5650 Ocean View Drive, Oakland, Cal.

Thousands of installations of this type of furnace from Vancouver to San Diego



"FIRE TRAVEL"

Diagram 1—A Babcock Furnace cut away to show the burner and "radiators" through which burnt gas passes.



"AIR TRAVEL"

Diagram 2. The same furnace showing how the fresh air circulates over the heated radiators and, warmed to the right temperature, rises and is carried through registers into the living rooms.

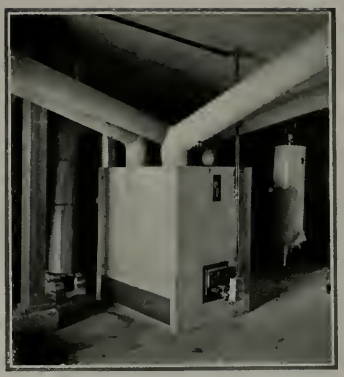
give testimony of its adaptability to Coast conditions. More than 3000 gas-fired furnaces of our manufacture alone are in use in California homes.

In giving householders the efficient and convenient heat of gas there are certain problems that confront the manufacturer of warm air furnaces. One of the most important is that of keeping the heated air wholesome. To achieve this result it is imperative that the air does not at any time come in contact with the products of combustion. This is accomplished in our furnace by enclosing the burner in a sealed cast iron pot and by the use of copper bearing steel radiators of 24 guage, having sealed joints. The accompanying diagram shows the "air travel" from intake to floor registers. It also shows the flue which carries any fumes or unburnt particles outside the house, insuring safety to the occupants.

Economy of operation is another important consideration, and in the case of our furnace, is effected by the adoption of an unusually long fire travel, which provides for the heating of large quantities of air at one time—a more economical process than heating smaller amounts more intensively. This method has the added advantage of retaining the moisture in the air and is an aid in keeping it wholesome. A recent invention, the Babcock Alternating Valve, permits further economy by confining the gas flow to only one-half of the burner when less heat is desired, decreasing the consumption accordingly. Which ever half of the burner is operating burns with full efficiency, and obviates the waste involved in a lowered flame. An automatic arrangement causes the burner segments to alternate in suspension of service, resulting in uniform wear on each.

A third factor of concern to the manufacturer of gas furnaces is the durability of his product. To insure a long life, the gas furnace must be guarded against leaks. A method we have found successful in eliminating this danger is to give the furnace a stack temperature high enough to prevent condensation, thus avoiding corrosion, the cause of leaks. Sealed joints are an additional safeguard.

With these three manufacturing problems satisfactorily disposed of, and with the obvious advantages of gas in the way of convenience, cleanliness, and labor-saving efficiency, it is inevitable that the gas-fired, electrically controlled warm air furnace will eventually become the universal means of heating modern homes.



A No. 80 Babcock Furnace installed in the home of Dr. C. A. Abramopoulos, 886 Twenty-fifth avenue, San Francisco.

$1,500,000 Hotel Addition

A fifteen-story Class A addition will be built to the Hotel Clift, Geary and Jones streets, San Francisco, from plans by Architects Shultze and Weaver, New York and Los Angeles. The addition will provide 200 more rooms and baths. Construction will start in May.

THE BABCOCK HIGH EFFICIENCY GAS FURNACE

Table of Dimensions and Capacity

No.	Floor Space	Height	Insulating Surface	Fire Travel	Heating Capacity (cu. ft.)	Heating Capacity (rooms)	Gas Consumption (Natural)	Gas Consumption (Manuf'd)
40	Diameter .... 29 in.	39 in.	24 sq. ft.	11 ft.	7,000	4	45 cu. ft. (per hr.)	75 cu. ft. (per hr.)
50	29x40 in.....	54 in.	52 sq. ft.	28 ft.	10,000 to 13,000 c. ft.	5-7	76 cu. ft.	125 cu. ft.
80	33x48 in.....	54 in.	63 sq. ft.	38 ft.	15,000 to 20,000 c. ft.	8-10	96 cu. ft.	175 cu.ft.
183	Diameter .... 42 in.	63 in.	58 sq. ft.	32 ft.	20,000 to 25,000 c. ft.	10-12	115 cu. ft.	225 cu.ft.
223	Diameter .... 54 in.	63 in.	75 sq. ft.	40 ft.	30,000 to 50,000 c. ft.	15-20	200 cu. ft.	350 cu. ft.

METHODS OF OPERATION—Three types of control are possible with the Babcock: Manual—turned on and off at the furnace. Remote — operated by a switch from the house. Thermostatic — automatic regulation of heat.

BOOK REVIEWS

Edited by
CHARLES PETER WEEKS

Standard Practical Plumbing, by R. M. Starbuck. Published by the Norman W. Henley Publishing Company, No. 2 West 45th street, New York. 407 pages, (7¼ x 10½) Price $3.50.

The author of this book is well known as an authority on plumbing. The subjects considered in the volume range from the connections of fixtures and all other detail work to all classes of private and public buildings. There are seventy full page plates showing all kinds of modern plumbing work. Valuable descriptive matter accompanies each plate. The book should prove an indispensable addition to every architect's library for it fully informs him on all matters pertaining to modern plumbing; in fact, it gives you the last word in up-to-the-minute plumbing equipment.

"Small House Designs"—134 pages, containing sixty designs of houses costing about $5,000 each. Collected from a competition conducted by the Community Arts Association of Santa Barbara. Price $5.00 prepaid. Sales Agent, H. S. Elliott, 25 Pacific avenue, Piedmont.

This book contains a collection of charming small houses. It will serve as a source of inspiration to all those interested in this particular problem. The designs for the Spanish type of house will be found very useful to local designers, as character has not been lost—a difficult thing to maintain in so small a building. The English half-timber type is also appropriate for this size house, and examples illustrated in this book are very interesting. The Colonial example represented will be found useful to our Eastern brethren.

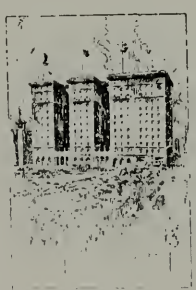
Taggart's Plumbing Questions and Answers—Published by the U. P. C. Book Company, Inc., 239 West 39th street, New York, N. Y. Price $1.50.

This book is written by a practical man, member of the American Society of Civil Engineers, and Plumbing Instructor in the New York City schools. Much of the fundamental information contained in the book is of general interest to architects, estimators, inspectors and the plumbing trade. Emphasis is laid upon the practice of New York City.

"THERE IS NO PROGRESS IN BUILDING"

(Concluded from page 117)

marks above mere Utopian longings and advances made in labor-saving devices within our own time cause us to wonder if his dream might soon become a reality. The recent war, says a writer in Stone, has given rise to much discussion of the possibilities of waging wars with machinery, gases, air bombs and devices that would tend to eliminate the organization of vast armies, but military experts express the opinion that while such instruments of destruction might be perfected, yet they would require man power to operate them, while there are some who insist that no war will ever be won without the fighting man in the front ranks. And so we view the hopes of Dr. Paterno; even when machinery is used there must be the directing hand.



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Send for the Kennedy catalogue to help you make a selection for your next job. 362

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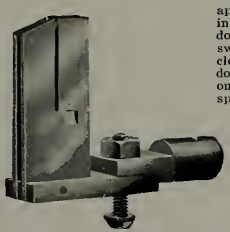
A Real Safe Switch

Too little attention is often paid to the materials and construction of enclosed switches. The illustration shows the construction of "CIRCLE T" Type A sweated and pinned switches built to stand over-loads and abuse. All parts are made of hard drawn copper, machined exact size and are distinctly different from the punched or built-up style of switches. In addition, the switches are positive, quick make and quick break, have ground contacts and close inspection is made on the assembly.

The iron boxes have an attractive appearance. A special feature is the interlocking attachment whereby the door cannot be opened while the switch is in contact or the door closed while switch is opened. The door, however, can be unlocked without disrupting the service when inspection or a test is desired.



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Dunham Company Takes Lead

C. A. Dunham Co., 230 East Ohio street, Chicago, have manifested unusual interest in, and compliance with, the standardization by the National Association of Heating & Piping Contractors of roughing-in dimensions of radiator traps.

The need for a closer standardization of roughing-in dimensions among manufacturers of heating specialties has long been apparent. To accomplish this end the Association devoted its energies to securing a standardization of dimensions that will effect a saving in time of installation and of the work involved.

It is typical of the Dunham Co. that it should have been the leader in adapting the well-known Dunham Thermostatic Radiator Trap to these standardized roughing-in dimensions. This company now supplies both its No. 1 and No. 2 Traps with the standard dimension of 3¼ inches from center of trap body to face of inlet nipple.

New Coast Manager

Mr. George P. Schwaab has been appointed Pacific Coast sales manager of the National Steel Fabric company and is temporarily stopping at the Hotel Stewart. The A. C. Rulofson company is no longer representing the interests of this company in San Francisco. The National Steel Fabric company is a subsidiary of the Pittsburgh Steel company. Its product—welded steel fabric, is used extensively by architects and builders the world over. The company has recently published a new catalogue that will be mailed to members of the architectural profession on request. The book explains and proves how and why it is advisable to build with reinforced concrete, plaster and stucco.

To Market Flagg Invention

The San Joaquin valley New Method Construction Company is being formed at Fresno to erect masonry houses in accordance with a system of construction invented by Architect Ernest Flagg of New York City. Mr. Earl J. Fenstermacher is attorney for the company, which will be organized under the laws of the state of Delaware.

Office Building and Warehouse

Architect M. V. Politeo of San Francisco, has completed plans and is taking bids for the construction of a one-story and basement Class B office building, display rooms and warehouse for the Sloss & Brittain Hardware Company at 10th and Howard streets, San Francisco. Mr. T. W. Corder is the owner and the estimated cost of the improvements is $85,000.

Building Labor Conditions Better

Building labor conditions throughout the country are considered generally favorable at present, according to a national survey of conditions in the building crafts just completed by S. W. Straus & Co. Current conditions are epitomized as follows:

1. Wages generally well stabilized with slight upward tendencies in larger cities where prospective building operations are large.

2. General employment at peak wages with especially pressing demands for bricklayers and plasterers.

3. Possible shortage of common labor with the development of activities now indicated by unprecedented volume of building permits.

4. Possibility of ensuing difficulties through jurisdictional dispute between Carpenters Union and Sheet Metal workers over installation of metal trim work.

5. Successful and significant co-operation of building trades, unions and contractors in establishing building trades apprenticeship schools to help relieve labor shortage.

"One of the factors in promulgating the generally favorable tone now pervading the situation," the survey states, "has been the unusual amount of employment throughout the building crafts during the winter months. These conditions were partly due to mild weather in some sections of the country, but it is noted that efforts to increase the volume of construction in the so-called off-seasons have been successful.

"Minneapolis, San Francisco, Baltimore, Philadelphia, Cleveland and Denver are among the principal cities where the 1923 wage scales are expected to be continued through 1924," says the survey. "In Cincinnati, St. Louis, Pittsburgh, Nashville, Kansas City, Youngstown, St. Paul, New Orleans, Houston and Sioux City increases either have been granted or are pending. A fairly ample present supply of building labor is reported in San Francisco, Los Angeles, Philadelphia, Kansas City, Atlanta, Minneapolis, Oklahoma City, New Orleans and Baltimore.

"In Los Angeles, Bricklayers' bonuses have been eliminated and the $10.00 a day wage scale is the minimum. Employers are opposing demands of a large group of workers for slight wage increases."

Alexander Eiffel Dead

Alexander Eiffel is dead at 91. He was the engineer who created the Eiffel Tower in Paris, France, and was one of the very few modern men who lived thirty years after his greatest achievement and did not see it eclipsed. The tower stands 984 feet high, the tallest structure ever erected by man.

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All floors installed by the Bonded Floors Company —Gold-Seal Battleship Linoleum, Gold-Seal Treadlite Tile, Gold-Seal Natural Cork Tile and Gold-Seal Rubber Tile—are covered by a Guaranty Bond issued by the U. S. Fidelity & Guaranty Co.

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The Flooring Contractor shall guarantee his work to the Owner or General Contractor (as directed by the Architect), against defects of material or workmanship for a period of five years from date of acceptance by the Architect, and shall, on receipt of written notice from the Owner, make—at his own expense—any repairs that may be necessary, except repairs of injury from any cause other than ordinary wear and tear; and shall furnish a surety bond in the full amount of the contract covering the performance of this guarantee.

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As you well know, a flooring specification, however carefully it is prepared, cannot in itself prevent substitution of inferior materials or faulty workmanship. Nor is the customary one-year guarantee sufficient protection against defective materials and careless workmanship, which do not generally become apparent in a single year.

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Casement Window Operators

3 Pages About Them in Sweet's

CATALOG No. 9 contains everything that's in Sweet's to which has been added additional material of particular interest to architects.

Booklet No. 10 is for the laity, and is largely an argument for casements.

It may help you with your clients.

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Louis M. Upton, *Architect*

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Fixture Firm Expands

The Home Manufacturing Company, Inc., has moved into its new home at 552 Brannan street, San Francisco, and Mr. Ernest Held, manager, deserves to be congratulated for ranking this concern with the leading manufactories of its kind in California. Beginning with a comparatively small plant in 1895 the company has expanded until last year larger quarters seemed imperative. A new building, designed to fill the needs of the company for some time to come, was erected almost opposite the old plant on Brannan street, and new equipment and machinery have been installed, making the factory one of the most up-to-date of its kind in San Francisco. The company manufactures bank, store and office fittings, hardwood interiors and cabinet work in all its branches. Special furniture, church interiors and show cases are lines in which this company has achieved an enviable reputation.

The A B C's of Electricity

So completely has electrical energy become a part of the current of life and of civilization that the world, in seeking information relating to the nomenclature of electricity, finds that:

The unit of electrical current is the ampere.

The unit of electrical pressure which causes the current to flow through a conductor is a volt.

One ampere of current at one volt pressure equals one watt of power.

A kilowatt is one thousand watts.

A kilowatt-hour is one thousand watts for one hour.

A horsepower is 746 watts.

A horsepower hour is 746 watts for one hour.

Ten 100-watt lamps burning for one hour consume one kilowatt hour of current.

Forty 25-watt lamps burning for one hour consume one kilowatt hour of current.

Wall Bed Company

A new company manufacturing and selling wall beds has recently opened offices in San Francisco. The company's main sales department is in Los Angeles where its beds have been manufactured and sold with success for some time. The Brown Disappearing Bed Company will maintain a service department, giving complete co-operation in the practical and technical work of installing Brown disappearing and Brown detachable disappearing beds. Blueprints are furnished architects and builders as a further aid in preparing their plans. Brown beds, according to the manufacturers, suggest beauty, durability, practicability and sanitation. They are also valuable space savers.

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6. Our glass is flat; it contains no reverse curves.
7. Our glass is uniform in thickness.
8. Our glass is perfectly annealed and therefore does not break as easily as poorly annealed glass.
9. Our glass is washed and thoroughly cleaned in an acid bath, which prevents discoloration and permits ready detection of defects.
10. Our glass cuts perfectly on both sides.
11. Our glass is graded to the highest standard of quality.
12. Our grading is the recognized standard for the United States, and is higher than the foreign standards.
13. Our glass does not break in shipment, on account of the uniformity of flatness, well made boxes, great care in packing, and skillful loading.
14. Our entire process is conducted on scientific principles.

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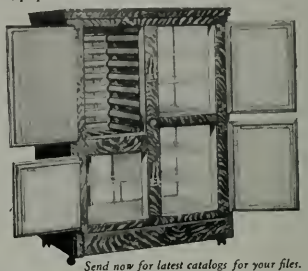

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Present Cost of Building Materials

THESE quotations are based on reliable information furnished by the San Francisco material houses. Date of quotations, April, 1924.
All prices San Francisco or Oakland. For country work add freight and cartage to prices given.

Bond—1½% amount of contract.

Brickwork—
Common, $35.00 per 1000 laid.
Face, $75.00 per 1000 laid.
Enamel, $150.00 per 1000 laid.
Common, f. o. b. cars, $15.50, plus cartage.
Face, f. o. b. cars, $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f. o. b. cars in carload lots.)

12x12x3 in.	$ 96.00 per M
12x12x4 in.	108.00 per M
12x12x6 in.	156.00 per M
12x12x8 in.	243.75 per M

Hod carriers, $6.50 per day.
Bricklayers, $10.00 per day.
Lime—$2.25 per bbl.; carload, $2.15

HOLLOW BUILDING TILE f. o. b. cars in carload lots.)

8x11½x5½	$108.00
6x11½x5½	85.00

Composition Floors—22c to 50c per sq. ft. In large quantities, 22c per sq. ft.

Composition Stucco—$1.90 to $2.10 per sq. yard (applied).

Concrete Work (material at San Francisco bunkers)—

No. 3 rock	$2.25 per yd.
No. 4 rock	2.30 per yd.
Niles pea gravel	3.50 per yd.
Niles gravel	2.35 per yd.
Niles top gravel	2.75 per yd.
City gravel	2.15 per yd.
River sand	1.75 per yd.
Delivered bank sand	1.00 per yd.

SAND

Del Monte	$1.25 to $1.50 per ton
Fan Shell Beach (Car lots, f. o. b. Lake Majella)	$2.50 to $3.00 per ton
Swedish cement	$2.68 per bbl.
Belgian cement	2.65 per bbl.
Cement (f. o. b. cars)	3.01 per bbl.

Rebate for sacks, 10c each.

Atlas "White"	$ 9.75 per bbl.
Medusa "White"	$ 9.95 per bbl.
Forms, Labors average	$27.00 per M

Wage—

Concrete workers	$5.00 per day
Cement finishers	8.50 per day
Laborers	5.00 per day

Dampproofing—
Two-coat work, 25c per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $5.00 per square.
Hot coating work, $2.00 per square.
Wage—Roofers, $8.00 per day.

Electric Wiring—$5.50 to $10.00 per outlet for conduit work (including switches).
Knob and tube average $3.00 to $5.50 per outlet.
Wage—Electricians, $8.00 per day.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in 4-story bldg., $3250; direct automatic, about $3000.

Excavation—
$1.25 per yard, if sand. Teams, $10.00 per day. Trucks, $21 to $27.50 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $105.00 per balcony.

Glass—(Consult with manufacturers.)
21 ounce, 16c per square foot.
Plate, $1.10 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 30c per sq. ft.
Obscure glass, 28c per square foot.
Note—Add extra for setting.
Wage—Glaziers, $8.00 per day.

Heating—
Average, $2.25 per sq. ft. of radiation, according to conditions.
Wage—Steamfitters, $9.00 per day.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.
Wage—Iron workers, bridge and structural, $9.00 per day.
Architectural iron workers, $7.00 per day.

Lumber—(Prices delivered to bldg. site)
Common, $35.50 per M (average).
Com'n O.P. (select, avrg.....$38.00 per M

Flooring—

1 x 6 No. 3—Form lumber	$23.00 per M
1 x 4 No. 1 flooring	62.00 per M
1 x 4 No. 2 flooring	59.00 per M
1 x 4 No. 3 flooring	46.00 per M
1 x 6 No. 2 and better flooring	58.00 per M
1¼ x 4 and 6 No. 2 flooring	63.00 per M

Slash grain—

1 x 4 No. 2 flooring	51.00 per M
1 x 4 No. 3 flooring	46.00 per M

No. 1 common run to

T. & G	$38.00 per 1000
Lath	5.50 per 1000

Shingles—(Add cartage to prices quoted)

Redwood, No. 1	$1.10 per bdle.
Redwood, No. 2	.90 per bdle.
Red Cedar	1.25 per bdle.

Building Paper—

1 ply per 1000 ft. roll	$6.25
2 ply per 1000 ft. roll	9.60
3 ply per 1000 ft. roll	14.55
Sash cord com. No. 7	1.25 per 100 ft.
Sash cord com. No. 8	1.40 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.30 per 100 ft.
Sash weights cast iron	60.00 Ton
Nails, $4.25 base.	

Hardwood Flooring—

⅛x3¼" T & G Maple	$137 M ft.		
1⅛x2¼" T & G Maple	140 M ft.		
⅞x3½ Sq. Edge Maple	116 M ft.		
	⅛x2¼" T&G	⅝x2" T&G	⅝x2" Sq. Ed
Clr. Qtd. Oak	$179 M	$124.00 M	$156 M
Sel. Qtd. Oak	135 M	92.50 M	114 M
Clr. Pla. Oak	140 M	92.50 M	114 M
Sel. Pla. Oak	124 M	80.00 M	97 M
Clear Maple	135 M	81.00 M	
Orion	140 M	100.00 M	100 M
Bagac	130 M	90.00 M	90 M
Laying and Finishing	16c ft.	15c ft.	13c ft.

N. B.—Materials and labor are plentiful at present time, with tendency to lower prices.

Wage—Floor layers $9.35 per day.

Millwork—

O. P., $100 and up per 1000. R. W., $120 and up per 1000.
Double hung box window frames, average) with trim, $8.00 and up, each.
Doors, including trim (single panel), $10.50 and up, each.
Doors, including trim (five panel), $8.50 each.
Screen doors, $3.50 each.
Cases for kitchen pantries seven feet high, per lineal foot, $7.50 each.
Dining room cases, $8.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy framing (average) $16 per m.
For smaller work, average, $28.00 to $35.00 per 1000.
Wage—Carpenters, $8.00 per day.
Laborers—$5.00 per day.

Marble—(Not set), add 40c to 60c per ft. for setting.

Columbia	$1.60 sq. ft.
Alaska	1.60 sq. ft.
San Saba	3.15 sq. ft.
Tennessee	2.00 sq. ft.
Verde Antique	3.75 sq. ft.
Westfield Green	3.50 sq. ft.

Wages—Marble setters, $8.00 per day; helpers, $5.50 per day. Marble polishers and finishers, $6.00 per day.

Painting—

Two-coat work	30c per yard
Three-coat work	45c per yard
Whitewashing	5c per yard
Cold water painting	9c per yard

Turpentine, $1.20 per gal. in cases and $1.05 per gal. in tanks.
Raw Linseed oil....$1.05 per gal. in bbls.
Boiled Linseed Oil.. 1.10 per gal. in bbls.
Pioneer white and red lead, 11¾c lb. in one-ton purchases; 12c lb. for less than 500 lbs.
Wage—Painters, $8.00 per day.
Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.50 lineal foot
8-inch	1.75 lineal foot
10-inch	2.25 lineal foot
12-inch	3.00 lineal foot

Pipe Casings—14" (average), $7.50 each.

Plastering—(Including Lathing)
Interior, on wood lath, 65c per yard.
Interior, on metal lath, $1.25 per yard.
Exterior, on brick or concrete, $1.30 per yard.
Portland White, $1.75.
Interior on brick or terra cotta, 60c to 70c per yard.
Exterior, on metal lath, $1.85 to $2.25 per yard.
Wood lath, $5.50 a yard per 100.
Metal studding, $1.25 to $1.50 per yard.
Suspended ceiling and walls (metal furring, lathing and plastering), $2.00 per yard.
Galv. metal lath, 33c and up per yard, according to gauge and weight.
Lime, f. o. b. S. F. warehouse, $2.50 bbl.
Lime, bulk, per ton of 2000 lbs., $19.50
Hardwall plaster, $15.40 per ton, f. o. b. warehouse. (Rebate on sacks, 15c.)
Finishing plaster (carload lots), $19.00.
Hydrate of lime, $19.50 per ton, f. o. b. warehouse.
Wage—Plasterers, $10.00 per day.
Lathers, $8.00 per day.
Hod carriers, $7.00 per day.

Plumbing—
From $70.00 per fixture up, according to grade, quantity and runs.
Wage—Plumbers, $9.00 per day.

Reinforcing Steel—
Base price for car load lots, $3.80 per 100 lbs., f. o. b. cars on docks.
Average cost to install, $25 per ton.
Wage—Housesmiths, $8.00 per day.

Roofing—
Five-ply tar and gravel, $6.00 per square for 30 squares or over.
Less than 30 squares, $6.25 per square.
Tile, $35.00 to $50.00 per square.
Redwood Shingles, $12.00 per square in place.
Cedar Shingles, $12.00 per sq. in place.
Reinf'd Pabco, 7 yr. roof, $7.50 per sq.
Reinf'd Pabco, 10 yr. roof, $10.25 per sq.
Reinf'd Pabco, 20 yr. roof, $13.50 per sq.
Recoat, with Gravel, $3.00 per square.
Wage—Roofers, $8.00 per day.

Sheet Metal—
Windows—Metal, $2.00 a square foot.
Fire doors, (average), including hardware, $2.30 per sq. ft.

Skylights—
Copper, $1.25 a square foot (not glazed)
Galvanized iron, 35c a square foot (not glazed).
Wage—Sheet metal workers, $8.50 per day.

Stone—
Granite, average $7.50 sq. ft. in place.
Sandstone, average Blue, $4.75; Bosie, $2.80 sq. ft. in place.
Indiana Limestone, $3.00 per sq. ft. in place.
Wage—Stone cutters, $8.00 per day.
Stone setters, $8.50 per day.

Store Fronts—
Copper sash bars for store fronts, corner, center and around sides, will average 85c per lin. ft.
Note—Consult with agents.

Structural Steel—$112 per ton (erected).
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.
Cost of steel for average building (erected), $108 per ton.

Steel Sash—
All makes, from S. F. stock, 26c to 34c per sq. ft.
All makes, plant shipment, 28c to 34c per sq. ft.
(Includes mullions and hardware.)

Tile—White glazed, 80c per foot.
White floor, 80c per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $1.00 per sq. ft. laid.
Wage—Tilesetters, $8.50 per day.

Residence of Mr. E. J. Cheesewright, *Pasadena* Designed by E. J. Cheesewright Studios

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IN STANDARD SIZES FOR HOMES AND APARTMENTS
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Here is a problem. Figure it out both from a practical and scientific standpoint. Given a boiler with 979 square feet of effective heating surface. How much steam space should it have to prevent priming? How much disengaging area for the liberation of steam under heavy firing? How about the water circulation? How much furnace volume to properly mix and burn the required amount of fuel oil? The relative dimensions of a firebox to effectively preheat the air, atomize and vaporize the oil and mix the elements of combustion? What is the best method of breaking up the hot gasses and applying them to the heating surface?

This is a real problem. Watch this space and see if you have the answer.

If you have not received your data on this new series, write the San Francisco Branch.

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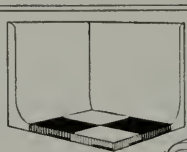

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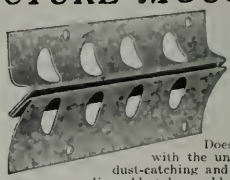

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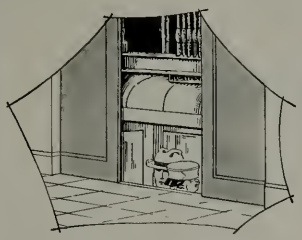

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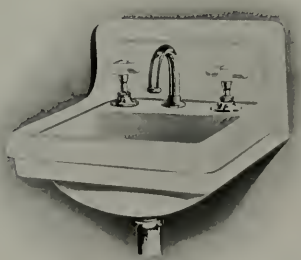

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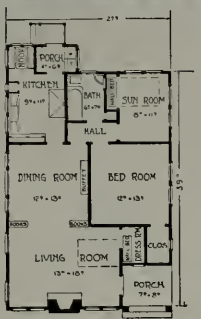

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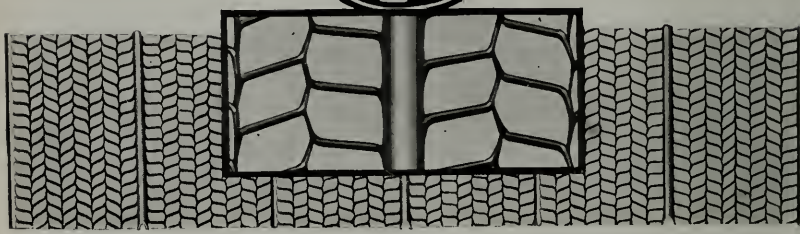

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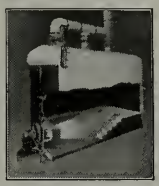

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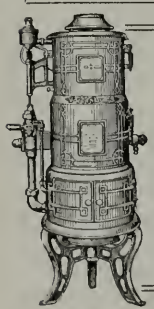

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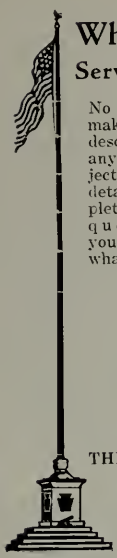

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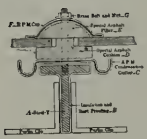

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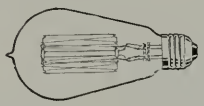

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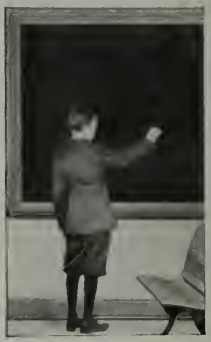

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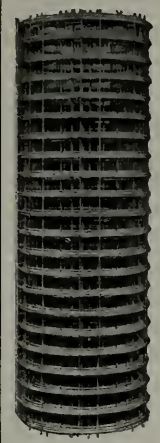

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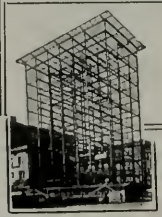

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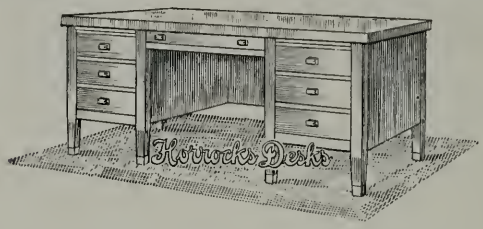

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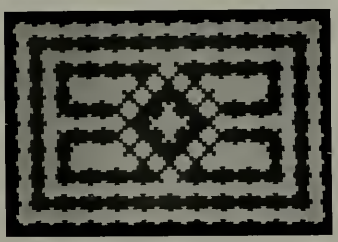

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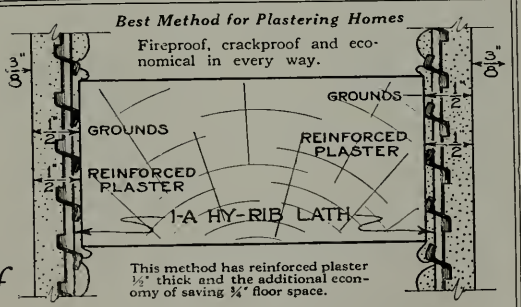

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MAY 1924

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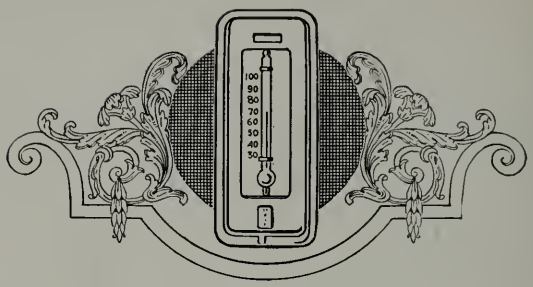

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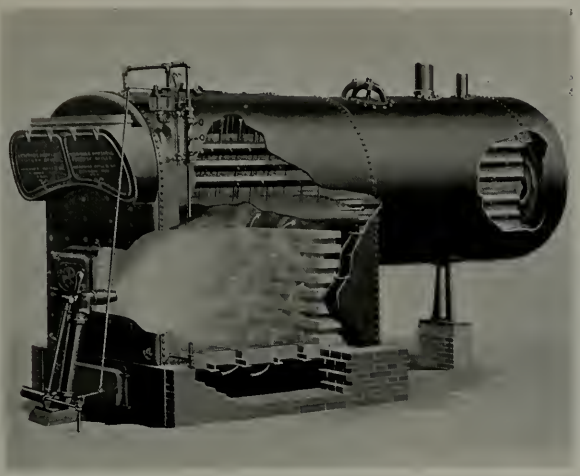

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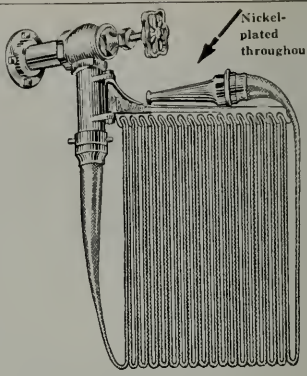

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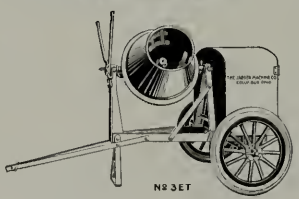

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Paulsen Bldg., Spokane, Wash.
Provident Bldg., Tacoma, Wash.

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ASBESTOS MATERIALS
- Johns-Manville Inc., of California, 500 Post street, San Francisco.
- Western Asbestos Magnesia Company, 25 South Park, San Francisco.
- Jones Bros. Asbestos Supply Co., Inc., 500 Second St., San Francisco.
- Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

ART METAL
- Federal Ornamental Iron and Bronze Co., 16th St., and San Bruno Ave., San Francisco.
- Michel & Pfeffer Iron Works, 1415 Harrison street, San Francisco.
- California Artistic Metal & Wire Co., 349 Seventh street, San Francisco.

ARCHITECTURAL TERRA COTTA
- N. Clark & Sons, 116 Natoma St., San Francisco.
- Gladding, McBean & Company, Crocker Bldg., San Francisco.
- Livermore Fire Brick Works, 604 Mission Street, San Francisco.
- Tropico Potteries, Inc., Glendale, Cal.

BATHROOM ACCESSORIES
- The Fairfacts Company, Inc., 234 W. 14th St., New York, represented by California Pottery Co., Mills Bldg., San Francisco and Wm. E. Graham, Kerckhoff Bldg., Los Angeles.

BEDS—WALL
- California Wall Bed Co., 714 Market St., San Francisco.
- Marshall & Stearns Co., Phelan Bldg., San Francisco.
- Brown Disappearing Bed Company, 746 Phelan Building, San Francisco.

BLACKBOARDS
- C. F. Weber & Co., 601 Mission St., San Francisco, Los Angeles and Reno, Nevada.
- Stewart Sales Co., 247 Rialto Building, San Francisco.
- "Permarock" Sold by Western States Seating Company, 39 Second Street, San Francisco.

BLINDS—VENETIAN AND DIFFUSELITE
- Western Blind & Screen Company, factory, Los Angeles; San Francisco representatives, Edward C. Dehn, Hearst Bldg., and C. F. Webber Co.

BOILERS
- Birchfield Boiler Company, Tacoma, Washington. See advertisement for Coast agencies.
- Kewanee Boiler Company, Factory Branch, Postal Telegraph Bldg., San Francisco.
- Kewance Water Supply System, Simonds Machinery Co., 816 Folsom St., San Francisco.
- Main Iron Works, 1000 Sixteenth Street, San Francisco.

BONDS FOR CONTRACTORS
- Bonding Company of America, Kohl Bldg., San Francisco.
- Globe Indemnity Co., 444 California St., San Francisco.
- Fidelity & Casualty Co. of New York, Balfour Bldg., San Francisco.
- Standard Accident Insurance Company, California Commercial Union Building, San Francisco.

BRASS GOODS, CASTINGS, ETC.
- H. Mueller Manufacturing Co., 1072-76 Howard St., San Francisco.

BRICK—FACE, COMMON, ENAMEL, GLAZED
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- N. Clark & Sons, 116 Natoma St., San Francisco.
- Richmond Pressed Brick Co., Sharon Bldg., San Francisco. Plant at Richmond, Cal.
- Livermore Fire Brick Works and California Brick Co., 604 Mission St., San Francisco.
- Cannon & Co., Sacramento; and 77 O'Farrell St., San Francisco.

BRICK & CEMENT COATING
- Armorite and Concreta, manufactured by W. P. Fuller & Co., all principal Coast cities.
- Minwax Co., Inc., 22 Battery St., San Francisco and 653 S. Clarence St., Los Angeles.
- The Paraffine Companies, Inc., 475 Brannan St., San Francisco.
- Wadsworth, Howland & Co., Inc., Jas. Hambly & Son, 1333 E. 7th St., Los Angeles, and 229 Clay St., San Francisco.

BRICK STAINS
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
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BUILT-IN FIXTURES
- Built-In Fixture Company, 2608 San Pablo Ave., near Dwight Way, Berkeley, and Hoosier Store, Pacific Building, San Francisco.

BUILDERS' HARDWARE
- Joost Bros., agents for Russell & Erwin Hardware, 1053 Market St., San Francisco.
- The Stanley Works, New Britain, Conn., Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
- Palace Hardware Company, Agents Corbin goods, 581 Market St., San Francisco.
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Waterhouse-Wilcox Co., 523 Market St., San Francisco.

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Smith Electric Company, 50 Natoma St., San Francisco.

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Old Mission Portland Cement Co., Standard Oil Building, San Francisco.
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Pacific Portland Cement Co., Pacific Building, San Francisco; Portland, San Jose and Los Angeles.
Monolith Portland Cement Company, 703 Market St., San Francisco and Los Angeles.

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Cement Gun Construction Co., Hobart Building, San Francisco.

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N. Clark & Sons, 116 Natoma St., San Francisco.
California Brick Co. and Livermore Fire Brick Works, 604 Mission St., San Francisco.
Cannon & Co., Sacramento, Cal.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
Tropico Potteries, Inc., Glendale, Cal.
United Materials Co., Sharon Bldg., San Francisco.

CLOCKS—ELECTRIC TIME
Standard Electric Time Co., 461 Market St., San Francisco.
Pacific Electric Clock Company, 86 Third St., San Francisco.

CONCRETE CONSTRUCTION
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Villadsen Bros., Inc., 749 Monadnock Building, San Francisco.

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Clinton Welded Wire Fabric, Wickwire Spencer Steel Corporation, 144 Townsend St., San Francisco.
Judson Mfg. Co., 817-821 Folsom St., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Triangle Mesh Fabric. Sales agents, Pacific Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., 709 Mission St., San Francisco.
Badt-Falk Co., Call-Post Bldg., San Francisco.

CONDUITS
"Sherarduct," Garnett Young & Company, 612 Howard St., San Francisco.

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Herbert Beckwith, Everson Bldg., Oakland.
Larsen-Siegriat Co., Inc., 807 Claus Spreckels Bldg., San Franrisco.
Lindgren-Swinerton, Inc., Standard Oil Building, San Francisco
R. W. Littlefield, 357-12th St., Oakland.
Murch-Williams Construction Co., Fox-Oakland Building, Oakland, Calif.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Dinwiddie Construction Co., Crocker Bldg., San Francisco.
John M. Bartlett, 357 Twelfth St., Oakland.
Clinton Construction Company, 923 Folsom St., San Francisco.
Monson Bros., 251 Kearny St., San Francisco.
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McLeran & Co., R., Hearst Bldg., San Francisco.

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Robert Trost, 26th and Howard Sts., San Francisco.
I. M. Sommer, 401 Balboa Bldg., San Francisco.
Jas. L. McLaughlin, 251 Kearny St., San Francisco.
Alfred H. Vogt, 185 Stevenson St., San Francisco.
Carl T. Peterson, 185 Stevenson St., San Francisco.

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Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.
David E. Kennedy, Sharon building, San Francisco, and Story building, Los Angeles.
Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles, St., Los Angeles.

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Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.

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"Imperial," manufactured by Brooks & Doerr, Merchants National Bank Building, San Francisco.
Minwax Co., Inc., 22 Battery St., San Francisco, and 653 S. Clarence St., Los Angeles.
Samuel Cabot Co., Boston; represented in San Francisco by Pacific Materials Co., Underwood Bldg., San Francisco.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco

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Haws Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 166-7th St., San Francisco.
San Francisco Elevator Company, Inc., 860 Folsom St., San Francisco.
Elevator Supplies Co., Inc., Hoboken, N. J.; San Francisco office, 186 Fifth St.
"Chelsea" dumb waiters, sold by M. E. Hammond, Pacific building, San Francisco.

ELECTRICAL CONTRACTORS
Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 956 Folsom St., San Francisco.
Central Electric Company, 177-79 Minna St., San Francisco
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Brown-Langlais Electrical Construction Co., 315 Fifth Street, San Francisco.
Newberry Electric Company, Alta Bldg., San Francisco
Smith Electric Company, 50 Natoma St., San Francisco.
Spencer Electric Co., 320 12th Street, Oakland, Calif.
Decker Electrical Construction Company, 149 New Montgomery St., San Francisco.
Electric Construction Company, 616 Broadway, Fresno.
Ne Page, McKenny Co., 589 Howard St., San Francisco, Oakland, Los Angeles and Seattle.

ELECTRIC PLATE WARMER
The Promethens Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Pacific Bldg., San Francisco.

ELECTRICAL PLUGS, RECEPTICALS, ETC.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
General Electric Company, Schenectady, New York.
"H. & H. Switches," Garnett Young & Co., 612 Howard St., San Francisco.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St.
Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.
Trumbull Electric Mfg. Co., Plainville, Conn. and 595 Mission Street, San Francisco.

ELECTRIC SAFETY INTERLOCKS
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.

ELECTRIC HEATING
"Globe" manufactured by Strait & Richards, Inc., Newark, N. J., represented by Atlantic Pacific Agencies Corporation, 204 Rialto Building, San Francisco.
Wesix Electric Heaters, manufactured by W. Wesley Hicks, Rialto Building, San Francisco.

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Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 166-7th St., San Francisco.
San Francisco Elevator Co., 860 Folsom St., San Francisco.
Van Emon Elevator Company, 1159 Howard St., San Francisco.

ELEVATOR MOTORS AND CONTROL
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and First National Bank Bldg., San Francisco, Calif.

ELEVATOR SIGNALS, DOOR EQUIPMENT
Elevator Supplies Co., Inc., Hoboken, N. J.; San Francisco office, 186 Fifth St.
Randall Control & Hydrometric Corporation, 265A Minna St., San Francisco, and 523 Central Bldg., Los Angeles.
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.

ENGINEERS — CONSULTING, ELECTRICAL, MECHANICAL
Robert L. St. John, 1011 Flatiron Building, San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.
Charles T. Phillips Company, Bank of Italy Bldg., San Francisco, and Roberts Bldg., Los Angeles.

FAIENCE TILE
Tropico Potteries, Inc., Glendale, Cal.
Michel & Pfeffer Iron Works, Harrison and Tenth Streets, San Francisco.

FENCES—WIRE AND IRON
Standard Fence Company, 432 Bryant, San Francisco and 60th and Lowell Sts., Oakland.

FIRE EXIT LATCHES
Vonnegut Hardware Co., Indianapolis, Ind., represented in San Francisco by C. H. Jensen Co., Call Building.

FIRE ESCAPES
Michel & Pfeffer Iron Works, 1415 Harrison St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.

FIRE HOSE RACKS
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

FIREPLACE—ELECTRIC
"Gloglog," manufactured by Strait & Richards, Inc., represented by Atlantic Pacific Agencies Corp., Rialto Building, San Francisco.

FIRE PROOF DOORS
U. S. Metal Products Co., 330-10th St., San Francisco.
Kinnear Mfg. Co., represented in San Francisco by Pacific Materials Co., Underwood Bldg.

FIRE SPRINKLERS—AUTOMATIC
Fire Protection Corp. of California, 315 Montgomery St., San Francisco.
Fire Protection Engineering Co., 142 Sansome St., San Francisco.
Grinnell Company of the Pacific, 453 Mission St., San Francisco.
Independent Automatic Sprinkler Co., 72 Natoma St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 552 Brannan St., San Francisco.
The Fink & Schindler Company, 218-13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.

FLAG POLES—STEEL
Pole & Tube Works, Newark, N. J., represented by H. M. Holway, Hobart Bldg., San Francisco, and 600 Metropolitan Bldg., Los Angeles.

FLOORS, BLOCK
Carter, Bloxonend Flooring Co., Kansas, Mo., represented on Pacific Coast by H. M. Holway, Hobart Building, San Francisco.

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Bull Dog Floor Clip Sales Co., 77 O'Farrell St., San Francisco, and 600 Metropolitan Bldg., Los Angeles.
Grip-Tite floor anchors, Cheek & Gillis, 625 Call Building, San Francisco.

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Carter, Bloxonend Flooring Co., Kansas, Mo., represented on Pacific Coast by H. M. Holway, Hobart Building, San Francisco.

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Cadwallader, Gibson Co., 5th & Brannan St., San Francisco.
Strable Hardwood Company, 511 First St., Oakland.
E. L. Bruce Co., Manufacturers, Memphis, Tenn.
J. E. Higgins Lumber Company, 423 Sixth St., San Francisco.
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Minwax Co., Inc., 22 Battery St., San Francisco and 653 S. Clarence St., Los Angeles.

FLUSH VALVES
Handy Self-Cleaning Flush Valve Co., 731 Folsom St., San Francisco.
Shroeder Flush Valve Company, 1300 N. Main Street, Los Angeles and 16 Steuart Street, San Francisco.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.
C. B. Babcock Company, 768 Mission St., San Francisco.

FURNITURE—OFFICE, SCHOOL, CHURCH.
Home Manufacturing Company, 543 Brannan St., San Francisco.

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W. & J. Sloane, 216 Sutter St., San Francisco.
Western States Seating Co., 39 Second St., San Francisco.
H. Rumph, 567 Howard St., San Francisco.
Fink & Schindler Company, 218-19th St., San Francisco.

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 862 Mission St., San Francisco.
Cobbledick-Kibbe Glass Co., 666 Howard St., San Francisco.
Fuller & Goepp, 32 Page St., San Francisco, and Jackson, at Eleventh St., Oakland.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.

GRANITE
Raymond Granite Co., Potrero Ave., and Division St., San Francisco.

GRAVEL AND SAND
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

GYMNASIUM EQUIPMENT—LOCKERS, ETC.
Ellery Arms Co., 583 Market St., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin Hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn.; Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
Vonnegut hardware, sold by G. H. Jensen Co., Call Bldg., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill.; Ewing-Lewis Co., 626 Underwood Building, San Francisco.

HEATING AND VENTILATING CONTRACTORS
Atlas Heating and Ventilating Company, Inc., Fourth and Freelon Sts., San Francisco.
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Lawson & Drucker, 450 Hayes St., San Francisco.
Lupen and Hawley, 906 7th St., Sacramento.
William F. Wilson Co., 328 Mason St., San Francisco.
W. H. Picard, 5656 College Ave., Oakland.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
H. G. Newman Co., 2004 Telegraph Ave., Oakland.

HEATING & VENTILATING EQUIPMENT
W. S. Haines & Co.'s steam specialties, O. M. Simmons Company, 115 Mission St., San Francisco.
C. A. Dunham, Chicago, Illinois; 585 Mission Street, San Francisco, and 119 E. 3rd Street, Los Angeles.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.
Illinois Engineering Co., 417 Market St., San Francisco.
Williams Radiator Company, 571 Mission St., San Francisco.
Warren Webster & Company, Sharon Building, San Francisco.

HEATERS, GAS GRATES, RADIATORS, ETC.
General Gas Light Company, 768 Mission St., San Francisco.
Ra-Do Fumeless Gas Radiators, Potter Radiator Corporation, 478 Sutter St., San Francisco
Humphrey Radiantfire, sold by Rudd Heater Company, 431 Sutter St., San Francisco.
Pacific Gas Steam Radiator Company, "Gas Steam Radiators," 571 Mission Street, San Francisco.

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California Brick Company, 604 Mission St., San Francisco.
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Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

HOSE—UNDERWRITERS UNLINED LINEN—RUBBER
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.

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Chicago Signal Co., represented by Garnett Young & Co., 612 Howard St., San Francisco.

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"Frigedaire," Sold by W. L. Cochran, 880 Mission St., San Francisco.

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The Incinerite, sold by M. E. Hammond, Mezzanine, Pacific Building, San Francisco.

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Western Asbestos Magnesia Co., 25 South Park, San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Miasion St., San Francisco.

LANDSCAPE ARCHITECT
Emerson Knight, 704 Market St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 514-516 Phelan Bldg., San Francisco.

LATHING MATERIAL—WIRE, METAL, ETC.
National Steel Fabric Company, Pittsburgh, Pa., and 564 Market St., San Francisco.
Pacific Materials Co., 525 Market St., San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco
Truscon Steel Co., 709 Mission Street, San Francisco.
Wickwire Spencer Steel Corporation, 144 Townsend St., San Francisco.
Youngstown Pressed Steel Co., Youngstown, Ohio.

LIGHTING FIXTURES
Benjamin Electric Mfg. Co., New York, Chicago, 580 Howard St., San Francisco.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St., San Francisco.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.

LIMESTONE, INDIANA
Indiana Limestone Quarrymen's Association, Box 770, Bedford, Indiana.

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D. N. & E. Walter & Co., 562 Mission St., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.
W. & J. Sloane, 216 Sutter St., San Francisco.
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.
Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles St., Los Angeles.

LINOTILE
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.

LOGS—ELECTRIC
"Gloglog," manufactured by Strait & Richards, Inc., represented by Atlantic Pacific Agencies Corp., Rialto Building, San Francisco.

LUMBER
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland, Los Angeles and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Santa Fe Lumber Co., 16 California St., San Francisco.
J. E. Higgins Lumber Company, 423 Sixth St., San Francisco.
Sunset Lumber Company, First and Oak Sts., Oakland.

LUMBER—HARDWOOD
Davis Hardwood Co., Bay and Mission Streets, San Francisco.

MANTELS—WOOD, TILE, ETC.
Mangrum & Otter, 827-831 Mission St., San Francisco.

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Ray Cook Marble Company, foot of Powell St., Oakland.
Joseph Mosto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.
Tompkins-Kiel Marble Company, 505 Fifth Ave., New York; also Chicago, Philadelphia and San Francisco.
Columbia Marble Co., 413 Rialto Bldg., San Francisco.

METAL DOORS AND WINDOWS
Pacific Rolled Metal Company, 715 Harrison St., San Francisco.
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 330 Tenth St., San Francisco.
Michel & Pfeffer, Harrison and Tenth Streets, San Francisco.

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Youngstown Pressed Steel Co., Youngstown, Ohio.

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National Mill and Lumber Co., San Francisco and Oakland.
Lannom Bros. Mfg. Co., 5th and Magnolia Sts., Oakland.

OIL BURNERS
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S. F. Bowser & Co., Inc., 425 Brannan St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Oil Tank & Pump Co., 430 Fourth St., San Francisco; 830 S. Los Angeles St., Los Angeles.

ORNAMENTAL IRON AND BRONZE
California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Federal Ornamental Iron and Bronze Co., 16th St., and San Bruno Ave., San Francisco.
Michel & Pfeffer Iron Works, 1415 Harrison St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.

PANEL BOARDS
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.

PANIC DOORS
Vonnegut hardware, sold by C. H. Jensen Co., Call Bldg., San Francisco.

PAINTING, DECORATING, ETC.
I. K. Nissel, 1147 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
A. Quandt & Son, 374 Guerrero St., San Francisco.

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Magner Bros., 414-424 Ninth St., San Francisco.
Baas-Hueter Paint Co., Mission, near Fourth St., San Francisco and all principal Coast cities.
Hill, Hubbell & Co., Los Angeles, Oakland, Portland, Seattle and 115 Davis St., San Francisco.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.
Oakley Paint Manufacturing Company, 727 Antonia St., Los Angeles, and Hearst Building, San Francisco.

PLASTER
"Empire," Manufactured by Pacific Portland Cement Co., Pacific Building, San Francisco, Portland, San Jose and Los Angeles.
Standard Gypsum Co., 305 Sharon Bldg., San Francisco and Los Angeles, Portland and Seattle.

PLASTERING CONTRACTORS
A. Knowles, Call Bldg., San Francisco.
MacGruer & Simpson, 266 Tehama St., San Francisco.

PLASTER REINFORCEMENT
National Steel Fabric Co., Pittsburgh and 564 Market St., San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.
Luppen & Hawley, 906 7th St., Sacramento.
W. H. Picard, 5656 College Ave., Oakland.
H. G. Newman Company, 2004 Telegraph Ave., Oakland.

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Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
H. Mueller Manufacturing Company, 1072-76 Howard St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
West Coast Porcelain Manufacturers, 334-335 Wells Fargo Building, 85 Second St., San Francisco.

PUMPS—HAND OR POWER
Fairbanks, Morse & Company, Harrison and Spear Streets, San Francisco, California.
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
Simonds Machinery Co., 816 Folsom Street, San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Pelton Water Wheel Co., 2022 Harrison St., San Francisco.
S. F. Bowser & Co., Inc., 425 Brannan St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Tank & Pump Co., 430 Fourth St., San Francisco; 830 S. Los Angeles St., Los Angeles.
Byron Jackson Iron Works, 55 New Montgomery St., San Francisco.

REINFORCING STEEL
Edward L. Soule, Rialto Bldg., San Francisco.
Badt-Falk & Co., Call Bldg., San Francisco.
Judson Iron Works, San Francisco and Oakland.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Pacific Coast Steel Co., Rialto Bldg., San Francisco.
Truscon Steel Co., 709 Mission St., San Francisco.
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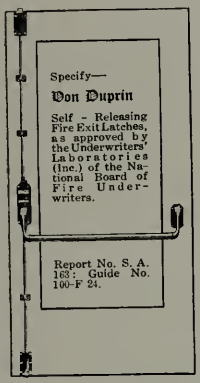
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Jones Brothers Asbestos Supply Co., 500 Second St., San Francisco.
Johns-Manville Inc., of California, 500 Post St., San Francisco.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.

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New York Belting & Packing Co., 518-19 Mission St., San Francisco.

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Wright Rubber Products Co., represented by Cheek & Gillis, 625 Call Bldg., San Francisco.
United States Rubber Co., 300 Second Street, San Francisco and 923 S. Los Angeles Street, Los Angeles, Calif.
Bonded Floors Co., Inc., 370 2nd Street San Francisco and 263 South Los Angeles Street, Los Angeles.

RUGS & CARPETS
W. & J. Sloane, 216 Sutter St., San Francisco.

SAFETY TREADS
Pacific Materials Co., 525 Market St., San Francisco.

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Trumbull Electric Mfg. Co., Plainville, Conn. and 595 Mission Street, San Francisco.

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American Chain Co., Bridgeport, Conn. and Pacific Building, San Francisco.
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SAFES AND VAULTS
Hermann Safe Company, 216 Fremont St., San Francisco.

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SCENIC PAINTING—DROP CURTAINS, ETC.
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SCHOOL AND THEATER EQUIPMENT
H. Rumpf, 567 Howard St., San Francisco.

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Ocean Shore Iron Works, 55 Eighth St., San Francisco.
Main Iron Works, 1000 Sixteenth St., San Francisco

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Central Iron Works, 621 Florida St., San Francisco.
Herrick Iron Works, 18th and Campbell Sts., Oakland.
Michel & Pfeffer Iron Works, 1415 Harrison street, San Francisco.
Judson Mfg. Co., 817-821 Folsom St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Coast Steel Co., Rialto Building, San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Ralston Iron Works, 20th and Indiana streets, San Francisco.
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- Kinnear Rolling Steel Doors, sold by Pacific Building Materials Co., Underwood Bldg., San Francisco.

STEEL SASH
- Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
- "Fenestra" Solid Steel Sash, manufactured by Detroit Steel Products Co., factory sales office, 251 Kearny St., San Francisco.
- Michel & Pfeffer Iron Works, 1415 Harrison street, San Francisco.
- Truscon Steel Company, 709 Mission St., San Francisco.

STONE
- Indiana Limestone Quarrymen's Association, Box 770, Bedford, Indiana.
- Raymond Granite Company, Potrero Ave. and Division Street, San Francisco.

STREET LIGHTING EQUIPMENT
- Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., and First National Bank Building, San Francisco.

STUCCO, COMPOSITION
- California Stucco Co., 340 Dore St., San Francisco.

STUCCO-PLASTER REINFORCEMENT
- National Steel Fabric Company, Monadnock Building, San Francisco.

STUDDING—FIREPROOF STEEL
- The General Fireproofing Company, 20 Beale Street, San Francisco

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- Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco
- Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., and First National Bank Building, San Francisco.
- Trumbull Electric Mfg. Co., Plainville, Conn. and 595 Mission Street, San Francisco.

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- C. F. Weber & Co., 601 Mission St., San Francisco.
- Western States Seating Co., 133 Kearny St., San Francisco.

THERMOSTATS FOR HEAT REGULATION
- Thermostats for Heat Regulation, Johnson Service, Milwaukee, Wisconsin; Rialto Bldg., San Francisco.

TOILET—SEATS
- Whale-Bone-Ite, Manufactured by The Brunswick-Balke-Collender Company, 623 S. Wabash Ave., Chicago, Ill.; Monadnock Building, San Francisco, and Security Building, Los Angeles.

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- Grinnell Co., 453 Mission St., San Francisco.
- H. Mueller Mfg. Co., 1072 Howard St., San Francisco.
- Kennedy Valve Mfg. Co., 23-25 Minna street, San Francisco.
- Schroeder Valve Company, 1300 N. Main Street, Los Angeles; 16 Stewart St., San Francisco.

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- N. H. Cook Belting Co., 317 Howard St., San Francisco.

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- Pittsburg Water Heater Company, 478 Sutter St., San Francisco.
- Ruud Automatic Water Heater, sold by Ruud Heater Company, 431 Sutter St., San Francisco.

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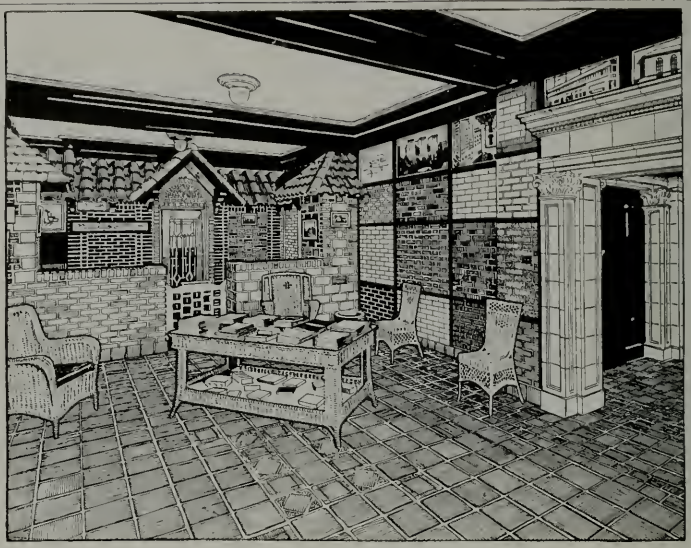

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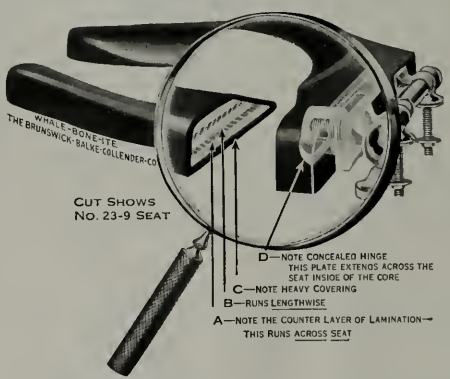

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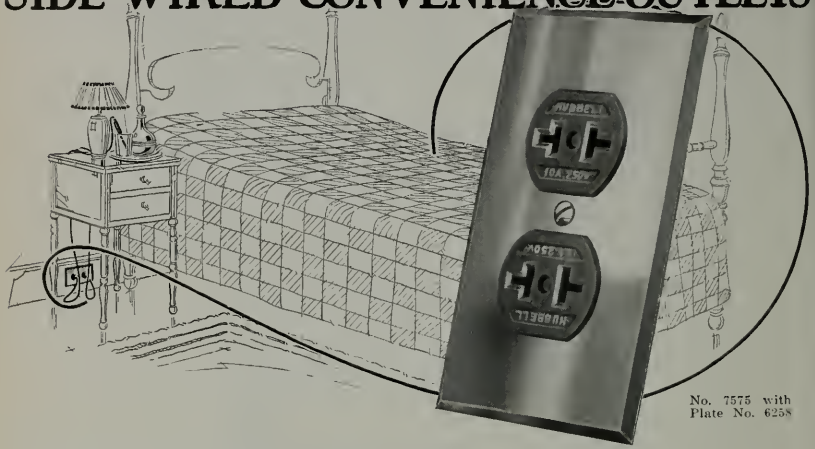

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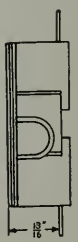

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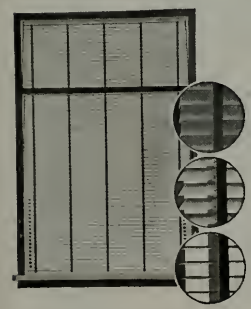

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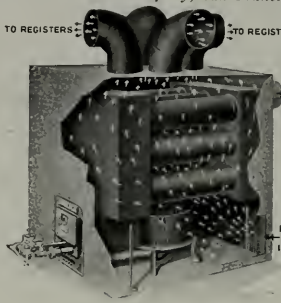

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VOL. LXXVII
No. 2

A Few Thoughts Suggested by the Recent Architectural Exhibition

By B. J. S. CAHILL, Architect

THE exhibition of architectural designs held recently at the San Francisco Bohemian Club, and herewith illustrated in part, suggests several things to the writer quite apart from the pictures and plans, which, of course, speak for themselves.

In the first place it is a long time since we have had an exhibition of this kind and we are led to suspect that there must be an inverse relation between work to be done in the office and work to be shown to the public. When the profession is very busy it has not the time, apparently, nor the need to show its wares.

On the other hand, it appears that much of the time-taking energy consumed in a formal exhibition could easily be avoided and the whole business so simplified that our architects could show their work semi-annually or even monthly. This, of course, professionally speaking, would be all to the good. Then why not discard this pomp and circumstance, the programs and the printing, the Persian rugs and potted palms, etc.? With these impediments out of the road, exhibitions being easier, could be organized oftener. Besides, this mania for setting an exhibition with so much expensive elegance does not necessarily argue distinction in the management; it is not the best bait for attendance; nor does it guarantee the excellence of the things exhibited. Indeed one could easily argue that this inordinate desire for style is a failing rather than a virtue, the foible of a climbing community, still in the road making stage of its development, and anxious above all to be thought very much "arrived" and "classy" and all that sort of thing.

Furthermore, the elaborate "Exhibition" resulting in the framed picture implies a very serious confusion in the mind between the utterly different purpose of the picture made by the artist, an end in itself, and the picture made by the architect, which is merely a means to an end, the actual building.

The frequent but informal architectural exhibition, for which earnest plea is here made, has many advantages over the formal but in-

frequent exhibition. In the first place the things exhibited would more naturally be the honest-to-goodness work done by our architects from day to day and not merely dolled up occasional drawings made expressly to show technique and often as not rendered by specialists and outside experts. These drawings would not show the same cleverness and artistry, but they would reveal other things far more important. There is no valid reason why the profession should be reluctant to show itself in shirt sleeves, as it were. Since it is proposed that only actual buildings be represented no one need be shamefaced about parading his plans when the actual building stands naked and unashamed for all the world to see and criticise any time. The very fact that a building well known to the public, rather than some unrealized project, can be seen in its inner structure, growth and development under the architect's hand is

STUDY FOR "MIGRATION"
Maynard Dixon

the best possible argument one could put forth for the frequent exhibitions here proposed.

The public is deplorably ignorant of the architect's relation to any building that he plans. Much worse than that, the public continues to look on the architect as an artistic but expensive chap who gets the owner's ideas in the main, puts on the fancy touches, but of course, in the long run is quite supplanted and superceded by the builder, the man who is really responsible for the solid structural and valuable part of the building. The public does not and cannot realize that the architect is the real and absolute builder of the building, that he is responsible for every quirk and turn in it; that every cubic inch of it has filtered through his mind as it were; and that to the very end he exerts his will on every piece of material used by the mechanics on the job from the bottom of the footings to the top of the flag-pole. There are several reasons why the public has never grasped this fact, one of them, un-

doubtedly, is this very practice of formal exhibitions of highly artistic and non-technical drawings and renderings made, apparently, in rivalry and competition with the work of artists. After walking through the luxuriously furnished and trick-lighted salons in which architects display drawings that never serve any useful purpose whatever in their actual work, it is small wonder that the visiting public takes the exhibiting architect precisely at his own valuation: one who makes pretty pictures for the most part and occasionally vast and grandiose public structures too remote from one's ordinary affairs to excite intimate interest.

Most of our architects will agree to the fact that some few years ago the profession had not only lost much of its prestige, but actually seemed on the downward road to extinction. The general impression

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was gaining ground that, in any building operation, the architect was not the captain of the enterprise, not the man to be most highly trusted and most highly paid. This notion was fostered by the banks who noted that financially the architect's position seemed to be of no importance; and by the builders, furtively and the building and engineering organizations openly, who naturally saw much advantage to themselves if they could shift the architect's position from above to below, so that he took orders from the construction company instead of giving them. It must be realized that the warfare here hinted at was in the main a silent and underground one. An actual example will illustrate the situation which is doubtless typical of hundreds of others.

Some six years ago a construction engineer who had a practical builder for a partner, also an office and draftsmen, made formal appointment with the writer. Having seated himself rather suggestively at my own desk he produced a pad and pencil, and delivered himself very

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John Reid Jr. Architect.

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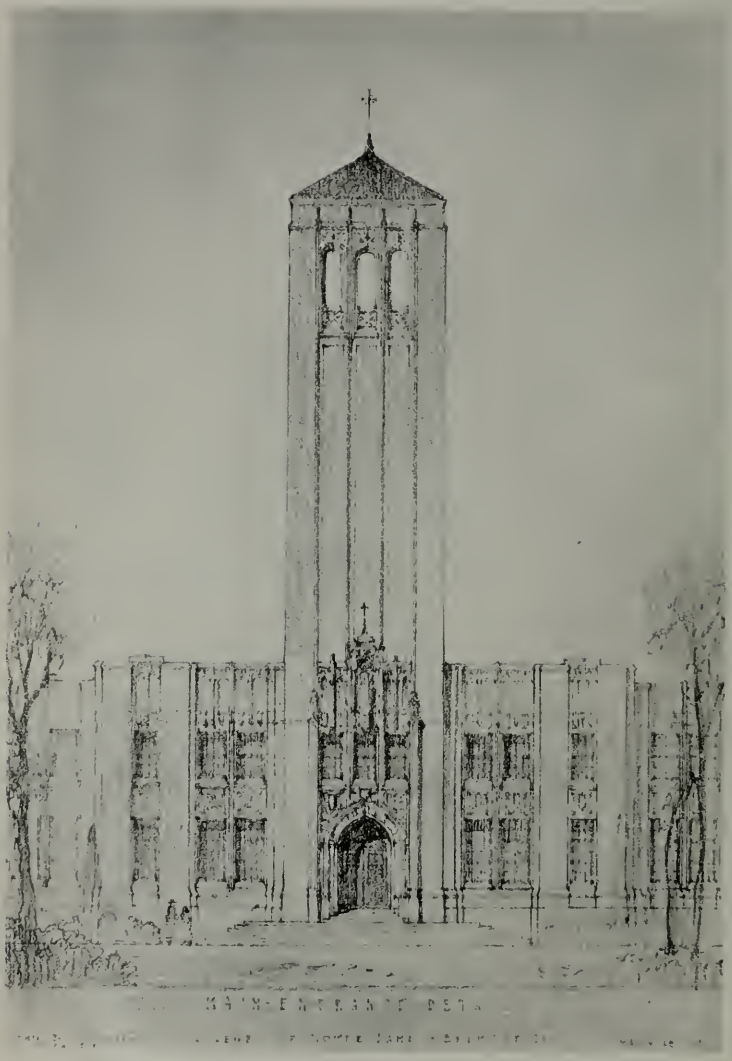

TOWER, COLLEGE OF NOTRE DAME, BELMONT
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much about as follows: "Now here is the situation in the building game, as it is, not theoretically but actually." He then began drawing one of those family tree sort of charts so dear to the efficiency experts. "Here," he said, "is the Owner (making a large round blob at the top of the center of the pad) and here (making a short vertical line and another big blob right under the first one) is **the Construction Engineer.**" Below this he drew another short vertical line and then a long horizontal one right across the sheet as though drawing a pair of scales. Then at equal distances from the center two more short vertical lines and two more black blobs representing the Architect on one side and the Superintendent on the other. It was all very clear and simple.

At the time I recall a depressing sense of dismay at what our profession was coming to. But not being very busy, I fell in with the proposition foreshadowed by this conversation, which, of course, led to an agreement to furnish plans for "The Construction Engineer" meantime helping him to land the contract.

All the needs of the Owner, in this case were passed down to the architect through the Construction Engineer, while all the ideas actually incorporated in the building were passed up to the Owner, also through the Construction Engineer, but ultimately from the Architect.

The Owners were not slow to perceive through what real agency their desires were realized and a few years later before building an extension much larger than the first unit, went first of all to the architect. Being persuaded, however, that much trouble would be saved in the process they also engaged a general contractor on a cost plus flat fee basis.

In the actual construction it was again found that not only were all the details furnished by the architect, but that he also and he alone knew enough about these details to interpret them to the sub contractors: to catch their mistakes when in time or to prescribe the remedy when too late. In other words it still seemed simpler also safer to deal directly with the real AUTHOR of the plans than to work in a roundabout way through the general contractors and their various deputies and subordinates.

And when finally, a couple of years later on, these same Owners got ready for a third extension, after mature deliberation, and a careful retrospect of their former experiences they came to a conclusion, quite interesting from a professional view point. With an acquired working practical knowledge of the art of building they decided to deal directly with the architect this time, not only in putting their wants into plans and specifications, but going still further and translating them into bricks and mortar. Meantime the original Construction Engineer who had conceived the architect as a sort of "side show" had made so little headway with his theory that he is now literally back on the farm. The general contractors who handled the second unit and incidentally had taken most of the fees, were eliminated and the entire responsibility centered on the architect who made the plans and saw they were properly carried out by means of a score of direct agreements and commitments commonly but quite erroneously known as SUB contracts. Let it be most emphatically understood that in the foregoing statement there is not the slightest criticism implied as to the Contracting Engineer or the General Contractor. But it is quite definitely intimated that neither of these, as we all thought some few years ago, is going to usurp the functions of the architect. On the contrary, it is the architect, according to the very latest and also the very earliest definition

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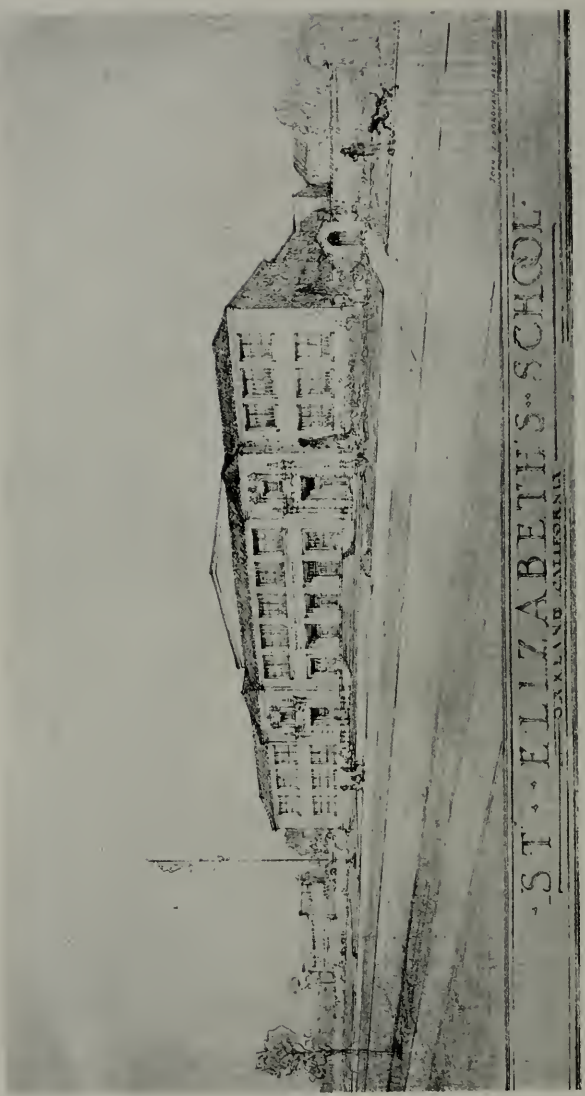

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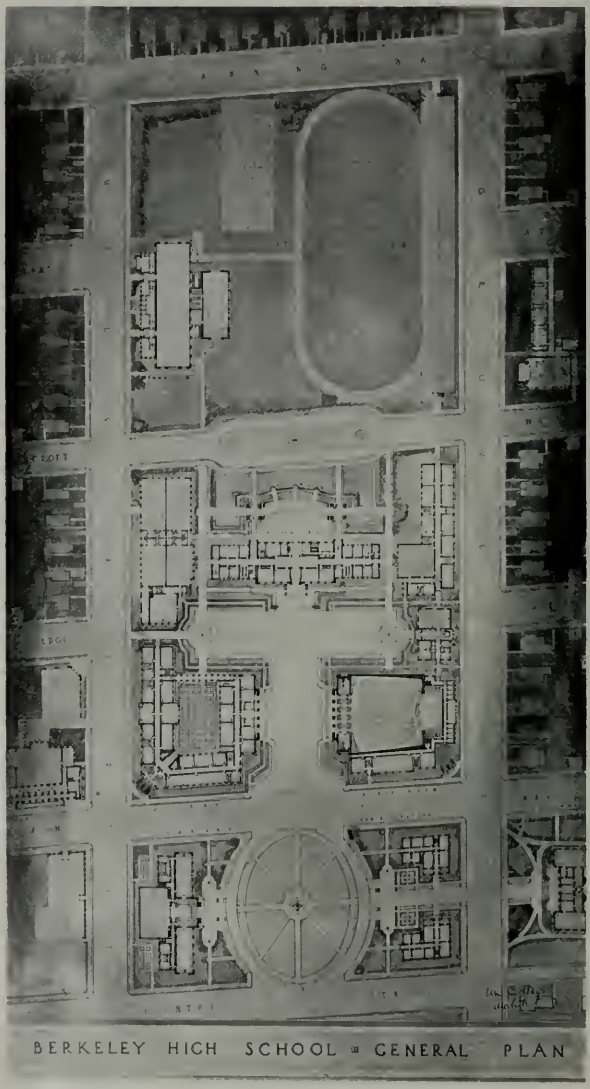

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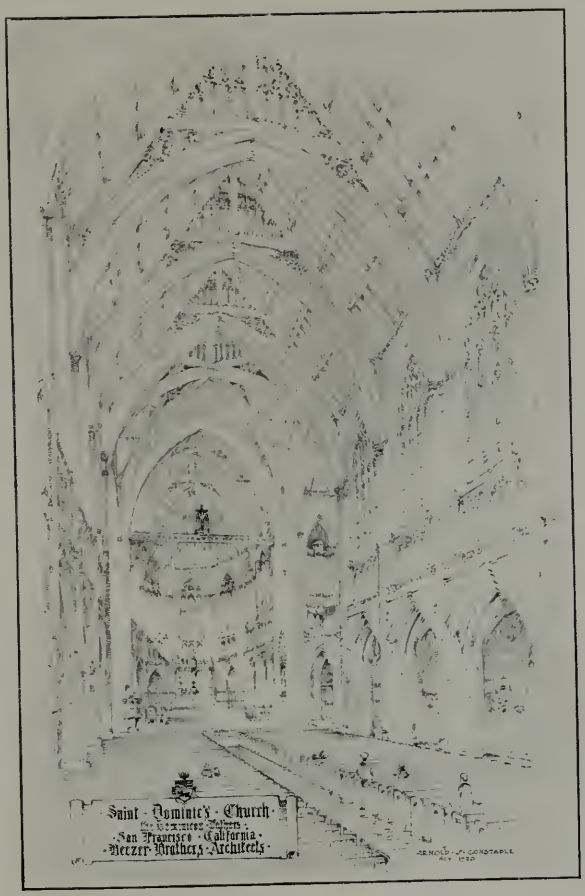

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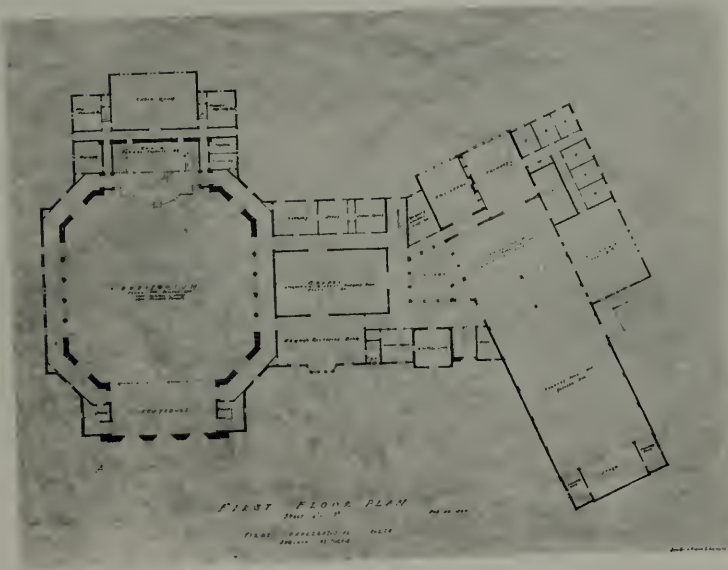

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Herbert A. Schmidt, Architect

who is supplanting the Construction Engineer and the General Contractor.

What is outlined here has been happening all over the country, and it is only fair to give credit to the most prominent pioneer in this very significant modern rehabilitation of the architect in his correct capacity of "the chief builder" for the original Greek word means just this, no more, no less, so that the qualifying phrase "Director" or "Manager of Construction" added to the word architect, is redundant and unnecessary. We might as well talk of a Doctor or "Director of Healing." But the tautology of the phrase can well be forgiven since it serves to correct a false impression as to what an architect really is. The late Daniel H. Burnham of Chicago used to insist on the architect's correct position as the "chief builder," and for this the profession owes Burnham an everlasting debt of gratitude.

It is then with the idea of fortifying and entrenching the architect in his new found strength and authority, that so much importance has been given here to the value of exhibitions which shall aim to show the architects as the real makers of buildings in all their many complexities rather than merely the makers of buildings in their superficial aspect as pictures.

RESIDENCE OF MR. WILL H. TOEPKE, SAN MATEO
WILL H. TOEPKE, ARCHITECT

RESIDENCE OF
MR. WILL H. TOEPKE,
GLAZENWOOD, SAN MATEO, CAL.
WILL H. TOEPKE, ARCH'T.

PLAN, RESIDENCE OF MR. WILL H. TOEPKE
WILL H. TOEPKE, ARCHITECT

SKETCH FOR OFFICE BUILDING
WM. A. NEWMAN, ARCHITECT

Delineations *of* Some Recent Work *of*

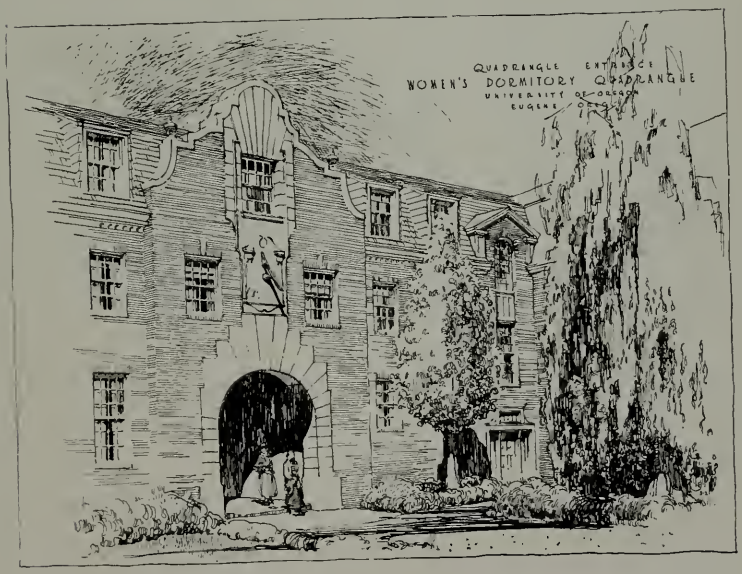
ELLIS F. LAWRENCE

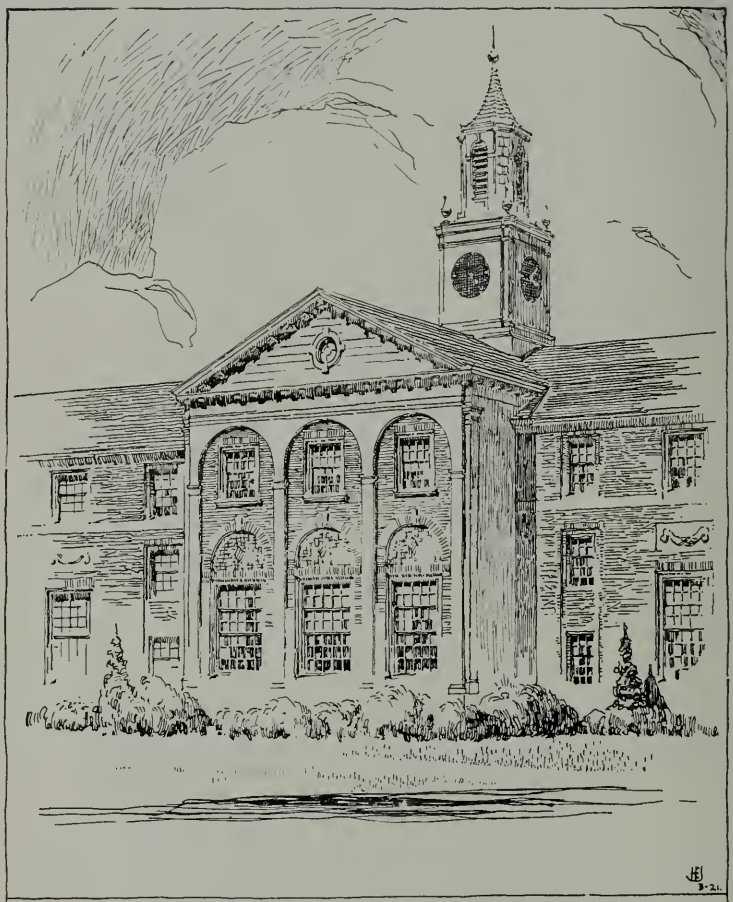
AND

WILLIAM G. HOLFORD, *Architects*

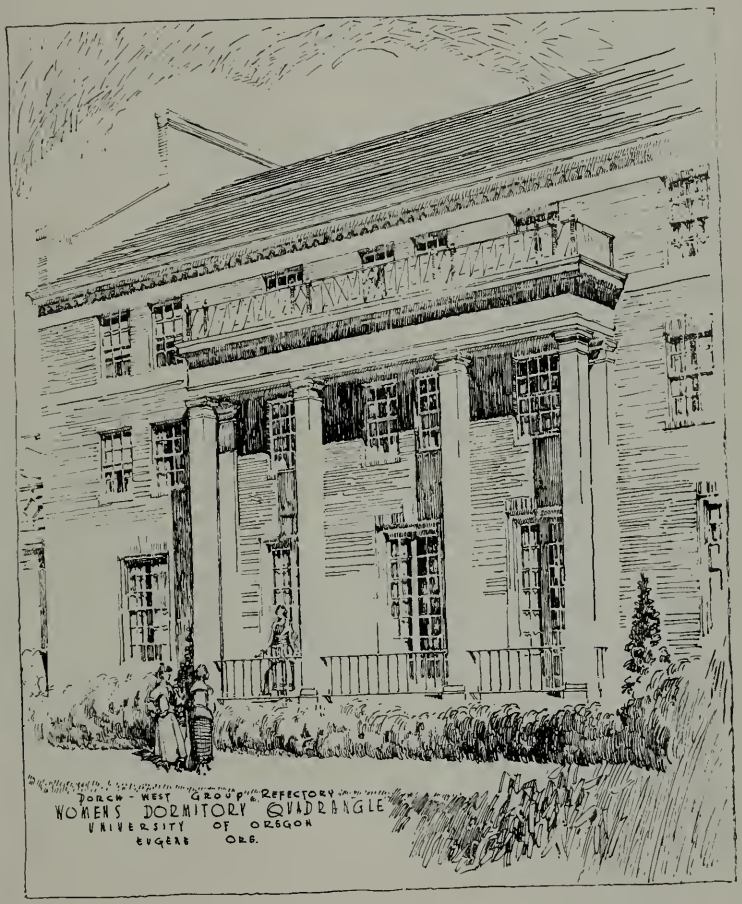
PORTLAND, OREGON

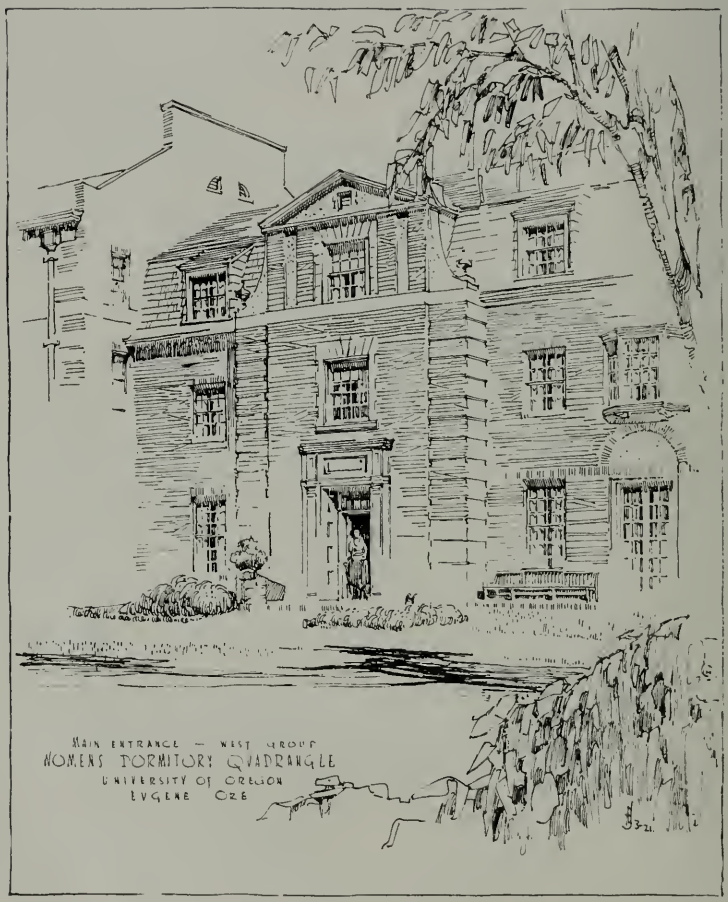
Delineators: Hollis Johnston, Louis C. Rosenberg,
Truman Phillips, Robert W. Turner.





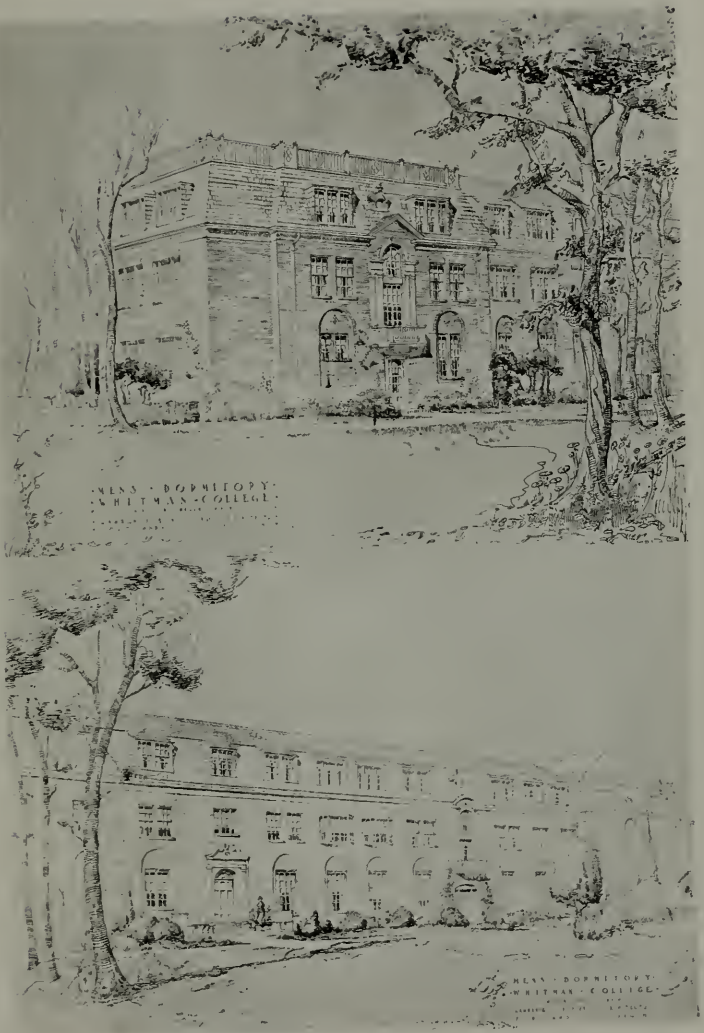
DOMESTIC SCIENCE BUILDING
WOMENS DORMITORY QUADRANGLE
UNIVERSITY OF OREGON
EUGENE ORE.


PORCH - WEST GROUP - REFECTORY
WOMENS DORMITORY QUADRANGLE
UNIVERSITY OF OREGON
EUGENE ORE.

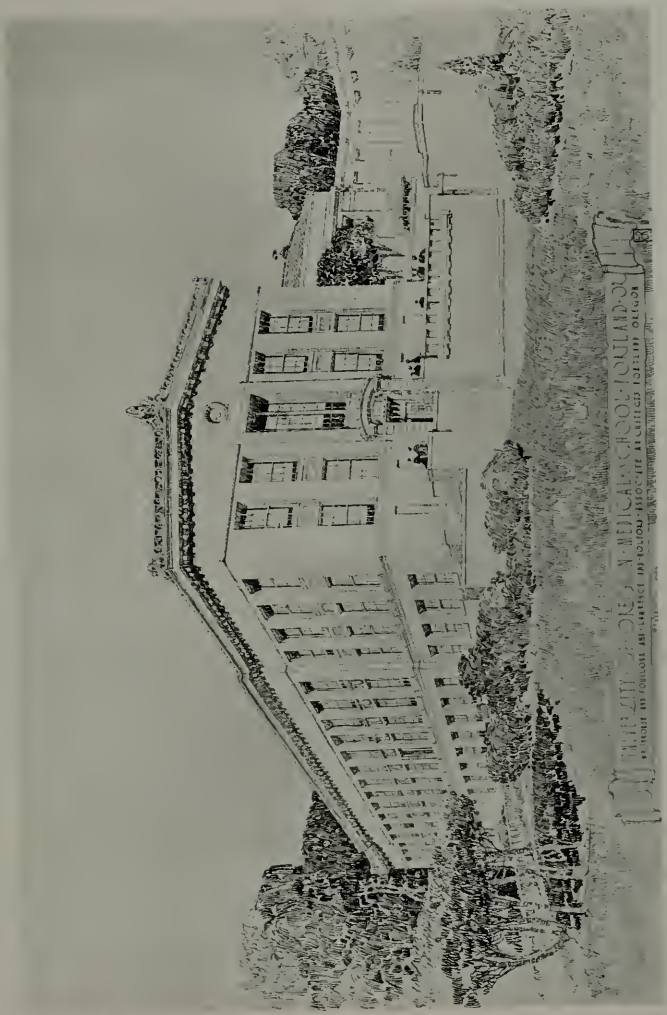

MAIN ENTRANCE — WEST GROUP
WOMENS DORMITORY QUADRANGLE
UNIVERSITY OF OREGON
EUGENE ORE

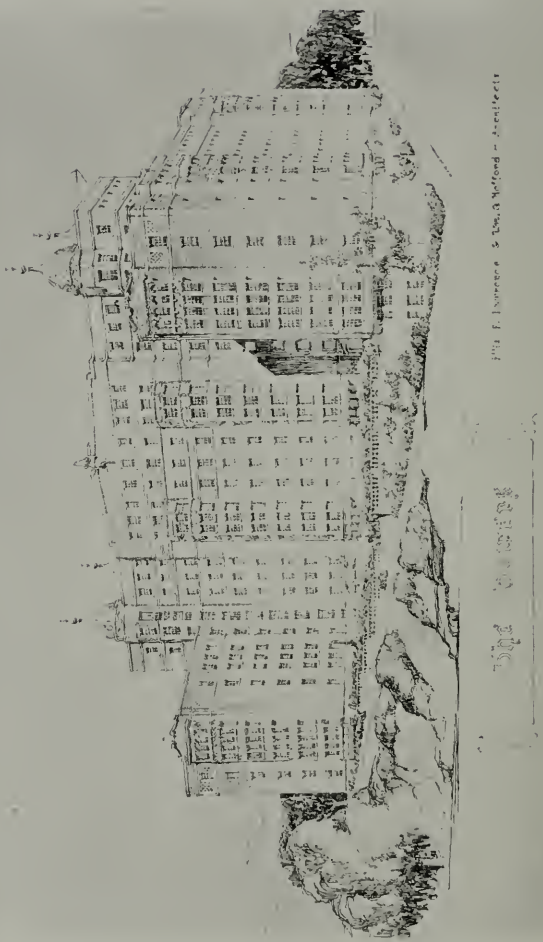
SCULPTURE AND WALL
WOMENS DORMITORY QUADRANGLE
UNIVERSITY OF OREGON
EUGENE ORE.

PRINCIPAL ENTRANCE
EAST DORMITORY GROUP - WOMEN'S QUAD.
UNIV. OF OREGON EUGENE ORE.

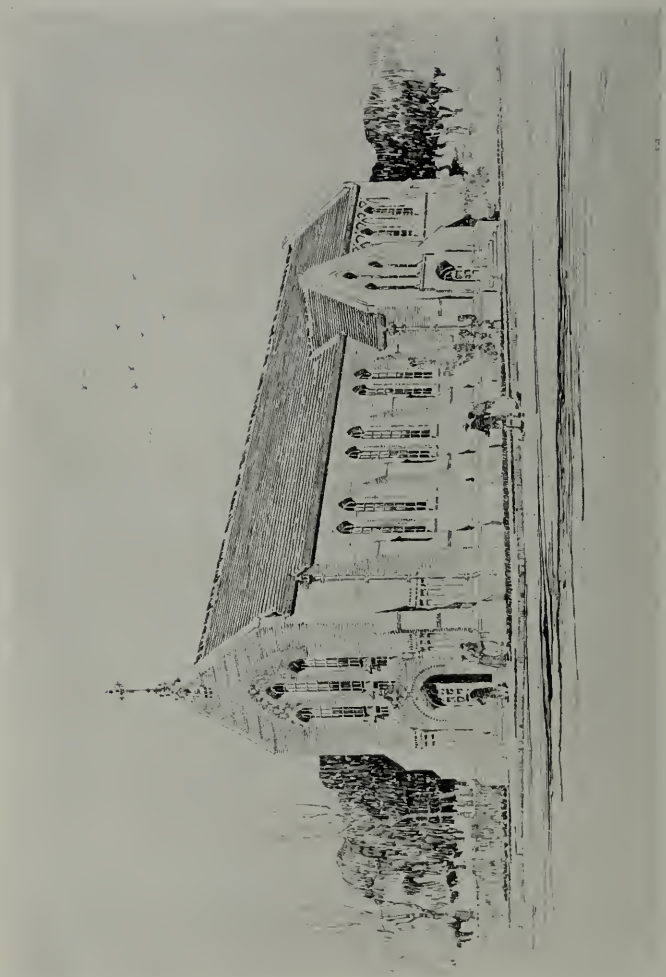

MEN'S DORMITORY
WHITMAN COLLEGE
MEN'S DORMITORY
WHITMAN COLLEGE

UNIVERSITY OF OREGON
MEDICAL SCHOOL
PORTLAND OREGON

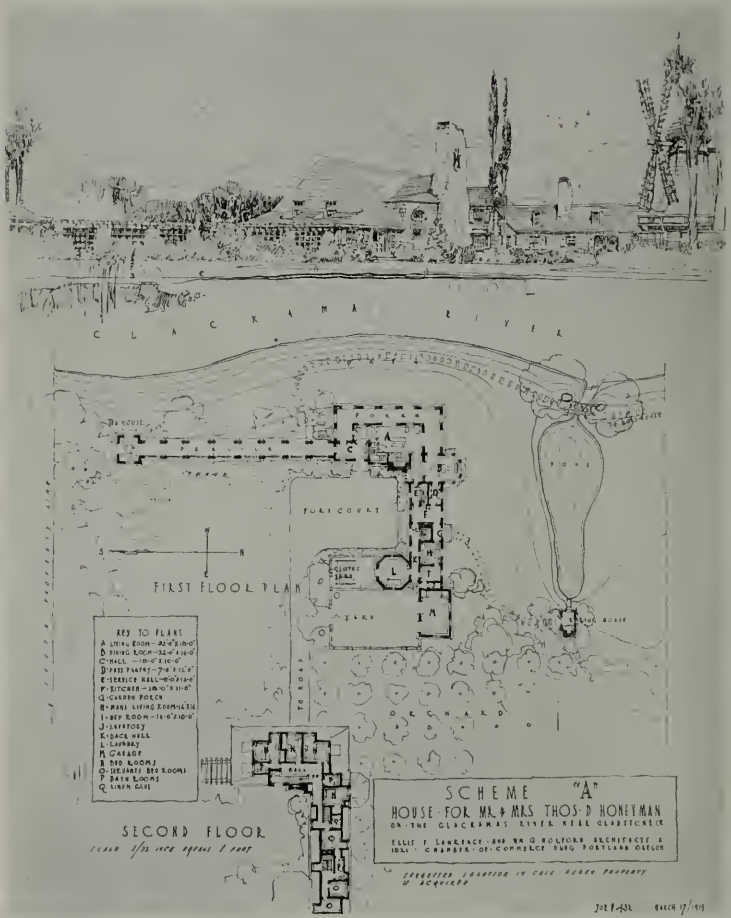


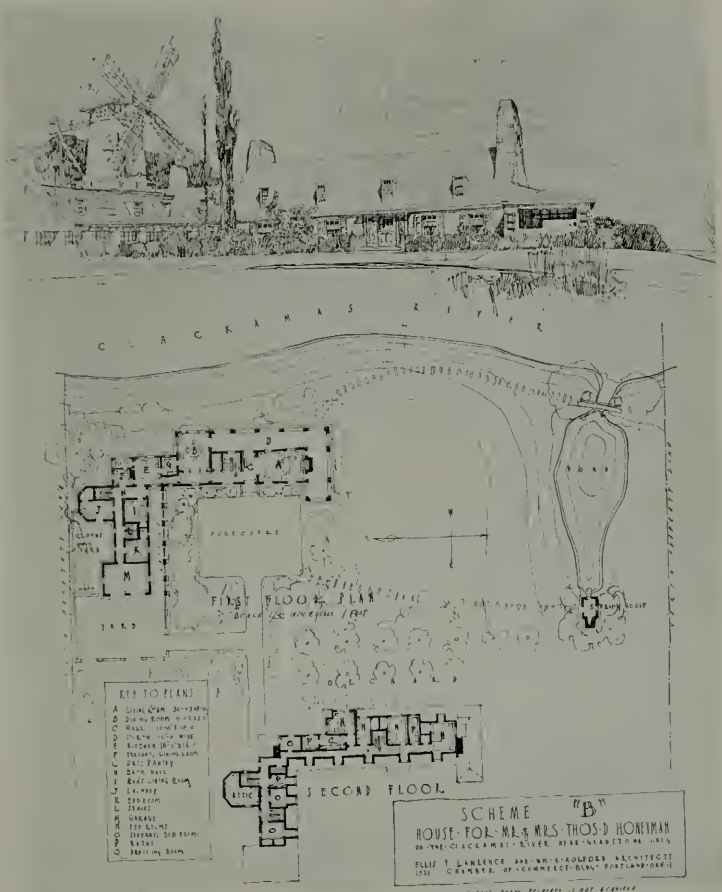


ST. ALBAN'S
EPISCOPAL CHURCH
AT HILLSBORO, OREGON.



St. Michael and All Angels' Episcopal Church
(Bishop Scadding Memorial)


C L A C K A M A S R I V E R
TURF COURT
FIRST FLOOR PLAN
KEY TO PLANS
SECOND FLOOR
SCHEME "A"
HOUSE FOR MR. & MRS. THOS. D. HONEYMAN
ON THE CLACKAMAS RIVER NEAR CLACKAMAS


CLACKAMAS RIVER
FIRST FLOOR PLAN
SECOND FLOOR
ATTIC
GARAGE
SCHEME "B"
HOUSE FOR MR & MRS THOS D HONEYMAN
ON THE CLACKAMAS RIVER NEAR GLADSTONE OREG
ELLIS F LAWRENCE AND WM G ROLFORD ARCHITECTS
1921 CHAMBER OF COMMERCE BLDG PORTLAND ORE

HOUSE FOR MR AND MRS GEO GELLINGER

People Without Homes*

By SIEGFRIED GOETZE
Civic Architect and Housing Specialist

THE subject of housing is closely related to City Planning. It is largely dependent upon the policy of city planning and its relation to transportation, street planning, and methods of subdivision.

Good housing is one of the ultimate and chief aims of city planning. The solution of the problem of housing for the masses of the population will determine, or largely influence, the future of the city, its health, its civic spirit and political aspect. The leadership of a community among the cities of the nation, finally depends for its establishment and maintenance upon the human material raised under the best housing conditions, which science and technique can produce. Will Los Angeles establish new standards in housing?

If the onrush of an ever-increasing population and the wholesale demand for small homes is not met by foresight and provision in wise planning for the future, we will have over-crowding and low standards. The social and political structure of Los Angeles will consequently be seriously affected and the health of the future generation will be disastrously undermined.

New industrial enterprises are springing up in Los Angeles on the east side and in the south towards the harbor where thousands now need,—and perhaps hundreds of thousands of workers will hereafter need—homes for which they cannot pay more than $20 to $30 a month. An average of $25 a month corresponds to an investment of $3000 at 10 per cent which, considering land values, would not be sufficient to build satisfactory quarters for a workingman's family with children. Large masses of labor necessary for the upbuilding of a large industrial community MUST BE PROPERLY HOUSED. It is necessary, therefore, that we give our most earnest thoughts and active endeavors to this problem.

Lack of space, parks and playgrounds, crowding on the land and in the rooms; the absence of light, sunshine and privacy and the resulting unhappiness in home life, are all threatening indications of improper conditions in this fast growing city. If housing in Los Angeles is not to be a repetition of the intolerable situation existing in older cities, a comprehensive system of housing must be at once adopted and effectually carried out to insure better conditions worthy of the highest American standards. The housing of the masses has been given little public attention except by the unscrupulous speculator who has found a large and profitable field by exploiting the most pressing needs of the people.

It is well to prove that housing in small homes is practicable and advisable and that savings will result to the families occupying them. Good housing, furthermore, is from a HYGIENIC point of view, of very great importance. Still we feel that there are stronger reasons than these underlying our desire to strive towards the better individual home.

We feel that rows of tenement houses create a tendency towards moral deterioration. There are people who have become so accustomed to the narrow city and its crowded quarters that they have become indifferent to any other life and are unable to rise above it. We have reason to become apprehensive of such people. They are members of a perishing generation. They remind one of old people who no longer care for exercise which is a sign that their end is near.

*Paper read before the Municipal League of Los Angeles.

Families whose children play in dark halls and courts will perish. There are families without number living such lives in our large cities, and even here in our midst. A family whose home does not invite a daily reunion at the table, carries a morbid explosive which will surely drive them apart, for each one will seek his hours of comfort and pleasure outside of the family. Streets which, through their long monotonous rows, invite one to seek recreation and peace in the outside world, make strangers and individuals of people, resulting in the lack of civic consciousness.

The streets of the homeless, the quarters of the crowds, become serious causes of civic deterioration and crime. And today we feel stronger than ever that we must be a PEOPLE; we dare not be a MOB. The higher the house grows and the more congested the crowd, the more indifferent one gets towards one another. Nowhere one lives so alone as in a tenement house. The closer the people live together, the farther they grow from each other until finally all community life ceases to exist. One has only to look into the living quarters of a metropolitan community and the conditions are most distressing. Increased immorality and infant mortality, the lack of decent home life resulting in the final breaking up of the home—all these are bringing us face to face with a problem which Los Angeles MUST solve.

In each family which moves into the narrows of the city, the anxious question arises: "Will you belong to the very few whom the rushing stream of the city will not engulf?"

Let us all help to give the home-sick people of our community: Garden Homes to Live In; economically planned and well built, pleasing in appearance, with all reasonable comfort, and with a California garden as the outdoor living room.

To the child: a place in the sun and grounds to play in.

To the mother: that degree of relief from household cares made possible through an efficient arrangement of the house plan and the greater use of the products of science in household appliances, thus decreasing her labor and increasing the pleasure and interest in the home.

To the father, returning from his daily toil: a cheerful home which, with its restfulness, will increase his industrial efficiency.

To Los Angeles, the preservation of the fair name of a "home city."

And to the Nation: good citizenship!

* * * *

Offices Use More Steam Than Stores

Cleveland offices annually consume 2300 more pounds of steam for each 1000 cubic feet of space than stores use, according to C. H. Day of the Illuminating Company of Cleveland, in a talk before the Cleveland Association of Building Owners and Managers.

Mr. Day submitted the following figures showing the consumption of steam in office buildings and stores per 1000 cubic feet of space per annum:

Office Buildings	Stores
12,000 pounds maximum.	10,900 pounds maximum.
4,000 pounds minimum.	1,600 pounds minimum.
7,000 pounds average.	4,700 pounds average.

* * * *

Architects Should Support Architectural Clubs

No city should be without its architectural club, which the practicing architects of the community should support freely with their money, their time and their interest.—Ellis F. Lawrence.

Right of Architect to Waive or Change Terms of Building Contract

By LESLIE CHILDS

THE question of the powers of an architect, in respect to changing the terms or specifications of a building contract during the progress of the work, is one of interest and importance to architects, and builders in general. And, while the subject has been the cause of considerable litigation, it cannot be covered by the statement of a hard and fast rule, because each case of this kind has necessarily been decided in the light of the particular facts involved.

However, generally speaking, in the absence of a clear grant of authority, an architect has no right to permit deviations from the contract. He is bound to see that the work is completed in accordance with the terms of specifications set out, and his acceptance of a different class of work than is specified in the contract will not bind the owner.

The application of this rule of law is illustrated in an interesting and instructive manner in the Washington case of Hurley et al Vs. Kiona-Benton School District, 215 Pac. 21. The facts and circumstances out of which the action arose were, briefly stated as follows:

The Kiona-Benton School District No. 27, entered into a contract with Hurley and Leichnitz whereby the latter were to do certain work upon a school building under construction. Upon the completion of the work it was not satisfactory to the school district, and demand was made upon the contractors to complete the work according to the contract.

Despite this, it seems, the architect in charge issued a final certificate in which he certified that the contract had been completed, and that the contractors were entitled to a balance due of $2,114. The school district declined to honor this certificate and the contractors instituted the instant action in an effort to enforce payment.

In defense of this action, the school district claimed that the architect had issued the final certificate without the exercise of judgment; that the contract had not been performed according to its terms, and that the workmanship was defective; in conclusion the school district asked for damages by reason of the failure of the contractors to perform properly.

Upon the trial of the cause it was shown that the contractors had failed to install certain plumbing, and cover certain pipes of the heating plant. In addition they had, it appears, substituted a second-hand boiler worth $150 instead of installing a new boiler that would have cost $900.

As an excuse for not complying strictly with the contract in these matters, the contractors contended that, under the architect's construction of the contract, they were relieved from the performance of this work. The contention being further that the issuance of the final certificate by the architect constituted an acceptance of the work by the school district.

The trial of the cause in the lower court resulted in a judgment of $722 in favor of the school district as damages for the failure of the contractors to perform according to the terms of the contract. From this judgment an appeal was taken to the Supreme Court of Washington, where in passing upon the power of the architect to permit deviations in the contract, it quoted from the provisions of the contract, in respect to the duties of the architect, in part, as follows:

"The architects shall have charge of the work for the owner, and their duties shall consist in giving on demand such interpretations, either in language, writing or by drawings as in their judgment the nature

of the work may require, having particular care that any and all work done and materials used be combined and done as hereinafter described and specified. * * * "

Following the above quotation from the contract, relative to the architect's duties, the court directed its attention to the question of the right of the architect, under this limitation, to change or waive the stipulations under which the work was to be done. In this connection it was, among other things, said:

"Under the contract the architect was without authority to change the contract. His duties in that respect were limited to interpretations of the contract. * * *

"The contract * * * in this case is clear, plain, and unambiguous, and cannot be varied or explained by parole evidence. Neither did the architect have authority to excuse appellants (the contractors) from the performance of any part of the contract and the issuance of a final certificate by the architect certifying that the provisions of the contract had been complied with * * * when in fact it was known by all parties connected with this transaction, including the architect himself, that the work provided in the contract had not been performed on the part of the appellants, constituted fraud, and was not binding upon either party to the contract, and the respondent (school district) is entitled to damages for failure of appellants to complete the work according to the contract. * * *"

In conclusion the Washington Supreme Court affirmed the judgment against the contractors rendered in the lower court. Holding, as outlined in the opinion, that under this contract the architect had no power to change the terms of the contract, which allowed the furnishing of work and materials different than were specified in the contract, and that his issuance of a final certificate under these conditions did not bind the school district.

* * * *

Efflorescence: Its Cause and Remedy

ALL masonry materials—stone, brick and concrete—are subject to possible efflorescence. Its occurrence is more common in the materials which are of a more or less absorptive nature. Thus, common brick frequently exhibits it, and likewise the more porous stones.

Efflorescence is caused by the depositing of soluble salts on the wall surface after the water of solution has evaporated. These soluble salts may exist in the mortar used in laying up the stone or brick, or they may exist in the brick or stone.

The action which causes efflorescence is—water from rain or drainage off window sills or eaves, soaks into the masonry walls and dissolves some of the soluble salts either of the mortar or the masonry material itself. After the rain has ceased, the water is drawn to the surface and evaporates, leaving the dissolved salts in the form of whitish crystals on the surface of the wall. This is the familiar "efflorescence," and it will be noticed that the presence of efflorescence is most common under window sills, roof copings, and other points where there is the greatest amount of water to soak into the wall.

The question then presents itself—"Why doesn't the white deposit dissolve and wash off in the next rain"? The reason is that upon exposure to the air these salts change their nature, absorbing carbon dioxide from the air and becoming carbonates, and hence largely insoluble in water.

From the explanation of the action of efflorescence, it will be apparent that the presence or absence of efflorescence is mainly due to local conditions such as the amount of absorption of the masonry material, the degree of exposure to rain-water, drippings and drainage, rather than to any factor inherent in the mortar or masonry material.

Since the absorption and evaporation of surface water is the primary cause for efflorescence, anything which will eliminate this absorption will aid in preventing efflorescence. The application of one of the colorless waterproofing compounds to the surface of the wall will eliminate absorption, and hence be of help. Among these materials might be mentioned sodium silicate (water-glass) and magnesium fluosilicate as surface application to concrete and stucco surfaces.

For efflorescence already existent, the only remedies, says an Atlas White publication, are brushing with a stiff fibre brush or wire brush, or the removal by scrubbing with an acid wash consisting of 1 part of commercial muriatic acid and from 4 to 10 parts of water, depending upon the amount of efflorescence present. After the white deposit is removed with the acid wash, the acid is thoroughly rinsed off. The deposits may recur and require additional acid washes, but the amount of deposit should be less each time, due to the dissolving out of all the soluble salts, and hence the deposit should disappear after a time.

* * * *

Stucco to Imitate Travertine

An effective imitation of Travertine stone is produced with Portland cement stucco as follows, according to a correspondent of Concrete:

The scratch and second coats of stucco are put on as for other stucco work, using mixes and methods recommended by the American Concrete Institute.

Before applying the third coat, the second coat is sprinkled to "kill" part of the suction. The finish coat is then applied and while it is still in the plastic condition the surface is stippled with a sponge or very coarse brush to pull up an irregular texture on the surface of the mortar. The coat is then lightly troweled, smoothing down the higher portions of the top coat to a plain surface, but still leaving some of the irregular indentations caused by the previous application of the sponge or brush used for stippling.

It goes without saying that the mechanic has to use considerable good judgment in regard to the location, spacing and arrangement of his stippled areas or instead of getting a Travertine stone effect he will get a job that is highly artificial and unpleasant in appearance.

Nearly all plaster contractors, however, have men in their organization who have some artistic sense and a degree of real craftsmanship, who do this type of work, once they understand the effect sought.

* * * *

Favor Holding a Competition

The voters of Alameda county manifested their disapproval of the proposed $5,000,000 bond issue for a new county court house at the recent primary election. This means that Oakland will have to get along with the present antiquated structure until another election is called. Meantime an attempt will be made to persuade the Supervisors to approve of a competition for building plans. It is believed there is sufficient talent in the Bay Region to bring out some splendid designs in the event of an architectural competition being held.

Complete Electrical Specifications

By WILLIS E. HUSON, Architect

IT would indeed be a great boon if we could pay our attorney six to ten per cent, based on any amount we thought proper, and get from him his regular services, and in addition have him advise us as to the proper preparation of our meals, the hanging of our curtains, how to adjust the electric piano, and about anything else we desired to know.

The architect is expected to perform as varied duties and in many cases be a walking encyclopedia. He must be able to write contracts, have knowledge of building laws, know construction, be familiar with hundreds of building materials, fabrics, finishes, paints, etc. He must know engineering, heating, ventilating, plumbing and electric work. In many instances he is expected to perform the duties of promoter and financier. The usual percentage received for architectural service is not adequate to compensate for such intensive and varied duties. As a result of the insufficient fee, certain branches of the work that are covered with building and insurance codes, are more or less allowed to take care of themselves. This is especially true of electrical work.

Electrical work is technical to the extent that it requires considerable knowledge and experience to properly lay out and specify a job of any importance. Electrical specifications are divided, in general, into two classes, those extensive enough to warrant the employment of an electrical engineer and those that do not. It is of the latter that shall be considered here.

The ideal electrical layout, should consist of complete indication of all wiring outlets of various types, each of which should have the wattage indicated. To indicate that an outlet should have the capacity of three lamps, does not mean anything, as this could just as well mean three lamps of four watts, or three lamps of 150 watts. It is also advisable to figure out the number of watts required to light the various rooms. The failure to do this usually results in too much light in some rooms and too little in others. It is desirable to indicate exactly how switches are to control the various lights, otherwise some one has to guess, and guessing rarely helps any job. The position of meters and panel boards should be studied out with relation to the main feeds and the exact location shown.

The age of electrical appliances is here to stay, and it is fair to assume that their usage in the next few years will be increased greatly. It should be the duty of the architect to provide for the increased use of electrical devices by providing floor, wall and power plugs, at convenient points for present and future use. This feature is usually taken into consideration by the average architect, and be even more so, did not the price element enter so strongly into the average job.

If the cost warrants, wiring for an electric range should be specified. In fact, the use of this type of stove is increasing so rapidly that it seems eventually it will replace most other types. Even though the owner of the residence or apartment may not immediately use electric heat for cooking, wiring should be done when the house is built, as the cost is so much less than afterwards.

The average electrical specification for small work leaves much to the imagination and gives the contractor too much guessing latitude. The contractor rarely guesses at anything but the cheapest. It is important to specify exactly the electrical requirements, such as kind and size of wire, push plates, switches, plugs, etc. Unless the grade of wire is specified a cheap wire will go into the job; it is true that the copper

of all grades of wire is practically the same, but the insulation differs greatly. The same is true of push plates and plug plates; if the quality is not specified the job is sure to be supplied with "competitive plates" of thin stamped metal and poor finish. The mechanism of switches varys greatly and if a satisfactory type is desired it should be specified, other sluggish, defective switches will result. It is also desirable to specify kinds of conduit, outlet boxes, etc. There are many varieties of outlet boxes and the type and grade should be specified to procure the best results.

In specifying types and grades of electrical devices it is better to mention manufacturer's name and catalog number. It is insufficient to mention name only, as the same concern manufactures many different grades and the cheapest grade will be selected by the contractor unless a better one is definitely specified. By exactly specifying catalog numbers it obviates long winded governmental specifications as to quality.

It is desirable for bidders to know where the service leads are to come in and the kind of current and whether it is to be brought into the building overhead or underground.

Wiring for telephones should be indicated and specified. This is also true of the humble bell circuits, which, if not designed and specified properly, will always be a source of trouble.

If the above suggestions were carried out, it would result in less confusion, a better job, and the contractor who really wants to give the owner value received, would not be forced to guess, or bother the architect, who as a rule has scant patience with bidders asking too many questions. Intelligent and concise specifications, complete in every respect, can be written, at little more work than the present haphazard one, that will result in improvement in electrical work on small jobs.

* * * *

Portland Makes Convenience Outlets Compulsory

In the 1924 Electrical Code published by the Department of Public Works of the City of Portland appears the following clause:

"Approved receptacles for attachment plugs, connected directly to the circuit wires by not smaller than No. 14 wire shall be provided in parlors, living rooms, dining rooms and kitchens. A light outlet shall be so placed as to illuminate the front of every furnace or heating boiler. These requirements apply to all buildings which are to be wired for electric light."

in a footnote it is explained that it is the purpose of the above rule to prevent so far as is possible unlawful and dangerous extensions of flexible cord in order to obtain outlets that are nearly always needed.

This is a new step in municipal regulation and marks official recognition of modern conditions in the home. Electric appliances are in such general use that there is hardly a family that does not use its electrical outlets for purposes other than lighting. The Portland code frankly recognizes this fact and specifies that proper provision shall be made to care for portable lamps and for labor-saving devices. So far as we have been able to learn, this is the first instance in which convenience outlets have been compulsory in a city code.—Journal of Electricity.

* * * *

Berkeley Favors Wooden Shingle

The voters of Berkeley have reversed themselves by voting in favor of the wooden shingle. Advocates of fire-proof roofing materials declare it will take another serious fire to convince the people that the wooden shingle is hazardous.

"SIERRA SPRING," BY H. OLIVER ALBRIGHT
Shown at the 47th Annual Exhibition of the San Francisco Art Association, Palace of Fine Arts.

Art Association's 47th Annual Exhibition

By RAY BOYNTON

THE 47th annual exhibition of the San Francisco Art Association, now being held at the Palace of Fine Arts, San Francisco, is likely to be a surprise to most of the followers of the art exhibitions in the transbay section—the exhibition brings together 352 pieces of painting, sculpture and graphic art. It reveals the presence of 131 artists in the vicinity of San Francisco and among them a lot of new names.

It is quite the best in years and that with a number of the regular exhibitors absent. It is refreshing in promising work and in its colorfulness. Color is quite frankly accepted as a medium of expression. This gives it a note of exuberance and youthfulness, but for all that there is less of the effort to be startling and original than might be expected. The Exhibition is surprising, too, in the small minority of the merely able sophisticated painting, empty of all content except skill, which so often usurps exhibition honors; and the staged model with stage properties is almost absent.

There is a lack of ripe mature expression, but no lack of seriousness; there is much that commends itself for its honesty and candor. The real test is for maturity to come without bringing compromise and disillusion. The sad thing is that so little is offered to encourage that youthful enthusiasm to ripen naturally here.

To say that it is youthful and enthusiastic is to say that it is modern in spirit and that it has variety. But what does the term modern signify? According to formula, it means seeing blue, we will say, where some one else has seen brown; seeing everything in geo-

metric shapes or in obvious distortions or in rigid simplifications. It may mean all of these characteristics or none of them—they are only the small change of the schools. But by all of these means men have arrived at a clearer understanding of form and its consistent organization in design. But by none of these characteristics is a work of art defined. By stripping form of its meticulous qualities of representation, by organizing and defining its volumes and spaces and rhythms in color, men have laid hold of some of the elements of organic design.

Modernism is not a sudden madness in spite of what the pundits say. It is a continuous thing and a part of the process of realism. Our own phase of it has been going on for the last fifty years and for the last hundred years it has been preparing in various steps. What is happening today is, in a large way, an attempted recovery of the authority of great design in a realism that has been exploiting technical resources in facile representation since the Renaissance. Facile emotionalism exploiting technical resources to their limit; facile representation without the restraint of great design; that is the poverty to which the Renaissance tradition had sunk long before our time.

It has been remarked lately that some of the lesser figures of the Renaissance, who realized without experimenting, were more and more coming to attention and that this is perhaps a natural reaction from a period in which we had done much experimenting with little realization. This is offered as an indication that we are coming again into a classical period. It may be so. Certainly "schools" seem to be less potent and the excuse for a work is not that it is a successful exposition of a formula but that it has realized something richly in its full expression.

Cezanne certainly had much to do with that release from the tyranny of schools, although he seemed to have let loose a curse of them on the land—cubism, futurism, synchronism, and whatnot—yet they were short lived enough and only cleared the air more fully for realization. Witness his own work which took hold of the experimenting of the Impressionists with light and color out of doors and shaped it toward the realization of a fundamental organic design. He could say of his own work, "I see these planes, these movements of form, these volumes; I note the color of each and put it down; bye and bye they become rocks and trees"—which argues that art is not so much a matter of formula as of purity of intention, and the confining of passion within a severe formal scheme. Men who put their feet within that charmed circle arrive at their own classical period regardless of their surroundings.

Painters, it seems to me, think too exclusively in paint. It would be a dicipline and a liberation for them to think sometimes in more restrained mediums—in pottery, for instance and textiles and frescoes and stained glass and carving. Walls are not nobly decorated by anything but noble design, no matter how much facile representation is spread over them in paint. The same is true of windows and pottery. Too many of our artists aim to be something less or something more than Sargent and think they are in the real stream of art. But Sargent never produced a great piece of design or a bit of color that was charged with emotion.

Sculptors are already learning to look to the restraint of materials and instead of elaborating the facile technique of modeling in clay they think their problems out directly in stone or wood, again like true craftsmen; for the artist was one time craftsman first and then artist.

SAN FRANCISCO
PUBLIC LIBRARY

If one or two men in a generation add something to the intellectual breadth of art the world is fortunate in new growth that follows. The problems of art are revised in contemporary terms and with these revaluations the stream of creative effort goes on, coming to terms with its objective world. It is this effort to see its environment in contemporary terms that makes the present exhibition worthy.

* * * *

Three Per Cent Lighting Fixtures

DEALERS in lighting equipment are participating in a campaign addressed to architects, contractors and home-owners, urging an allowance of 3 per cent of the construction cost of dwellings for lighting fixtures, says a writer in the Improvement Bulletin.

Too often the item of lighting fixtures is not taken into consideration at all at the time the building is planned and the cost estimates are prepared, with the natural result that the cost of lighting fixtures comes out of the surplus, if there is any, after everything else has been paid for.

Usually there are unexpected costs, either because of alterations in the original plans, or of unexpected contingencies arising in the course of the work, with the result that the owners of completed buildings quite commonly say:

"We have already spent so much money on the building that we will have to get along with cheap lighting fixtures. Perhaps we can replace them with better fixtures some time in the future."

Men engaged in the lighting industry say that the average cost of lighting installation in the average house has been 1 per cent of the construction cost.

Allotments for plumbing and heating installation are usually quite carefully figured out at the time the plans are made, with allotments provided therefor of from 5 to 15 per cent of the total cost of construction.

It is a mistake to equip homes that have attractive interior finish and beautiful furnishings with cheap and uninteresting fixtures, out of harmony with the architect's design. The lighting fixtures should enhance the beauty of the home—not detract from it. Cheap lighting fixtures in an otherwise attractive home are comparable to a bargain counter necklace worn with a costly evening gown.

Sometimes the owner compromises on a few good pieces in the living room and dining room, with cheap fixtures elsewhere throughout the house. The result is absurdly incongruous.

The movement for a 3 per cent allowance for lighting fixtures started in Detroit. The National Association of Lighting Equipment Dealers embarked upon a campaign to arouse architects and owners to the importance of selecting fixtures in harmony with the home, and to set aside a definite sum for that purpose. The 3 per cent idea preached by dealers has been slowly spreading until now it has achieved national recognition.

* * * *

Bill Forbids Spraying Machines

A bill before the New York State Legislature proposes forbidding the use of spraying machines in the application of white wash, paint and varnish. Its manifest purpose is to exclude the use of important labor-saving machines in connection with painting, varnishing, etc.; ostensibly on the ground that paint spraying machines are prejudicial to the health of workmen.

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ARCHITECTURE is like language; it is a matter of development and tradition. New words are coined to meet new needs and to express new ideas. These words may be inadequate or misunderstood in the earliest phases of their use. It is just so with architecture; new forms may be devised, they cannot always be found in the earliest stages of such a development as we are going through, but I have the greatest confidence that they will be found and that solutions which will be presented will remain as examples of intelligent adaptation to conditions and that the result will have a beauty of its own.

CASS GILBERT.

VALUE OF ARCHITECTURAL EXHIBITS

The recent Architectural Exhibit in the Bohemian Club rooms in San Francisco has been the means of reviving interest in such events and it is earnestly hoped that the exhibition will be made an annual affair. While the material shown at this year's exhibit was nothing extraordinary, as a whole, there nevertheless were some very creditable displays. Had the exhibition been properly advertised and talked about in advance of the opening date, more time undoubtedly would have been spent by contributors in the preparation of their exhibits, and there would have been a much larger attendance by the public. Some of the displays unfortunately showed evidence of too hurried selection. Future exhibits should include only the more recent work of the exhibitors since it is the architecture of today that we are most interested in.

The idea of holding an Annual Exhibition has many good features. It stimulates interest in the Arts and encourages better work. It offers the public a splendid opportunity to better acquaint itself with what the architectural profession is doing and at the same time helps to educate the layman more intelligently to appreciate good architecture. The public is always glad to take in something that is free and if the exhibition were well advertised in the newspapers there would be no difficulty drawing a crowd. And if one out of every ten visitors is converted into a keener appreciation of good architecture the exhibition will have accomplished its purpose. By all means make it an Annual and besides the Institute Chapter, invite the Architectural Club, Water Color and Sketch Clubs to participate.

NEED OF FIREPROOF CONSTRUCTION

The need for fireproof construction in cities is being more widely recognized every day. The recent Berkeley disaster brought the lesson more closely home than anything in late years. Fire will continue to destroy property so long as inflammable building materials are used, and until permanent fireproof buildings and homes are erected, the toll of human lives and property will be exacted annually in increasing amounts.

Fire losses in the United States in 1922 totaled more than $521,-

000,000. This is a loss of a million and a quarter dollars a day. About 65 per cent of these losses occurred in residences. More than 15,000 people lost their lives by fire, and many more thousands were injured. Of those killed or injured in fires, 83 per cent were women and children.

The total building operations recorded in the United States in 1922 were a little less than $5,000,000,000; so that in that year 10 per cent of all new building was entirely consumed by fire. At that rate, every ten years an entire year's construction goes up in smoke.

THE modern architect, if he is to survive the dangers which threaten his profession, must learn the lesson of co-operation. He must realize the functions and the rights of all the elements in the building industry. He should lead in reforms, but he has too long played the role of dictator. His isolation has been especially marked in his failure to fraternize with the craftsmen who erect his buildings, and who of all the men in the industry, can be most useful in carrying out his standards of construction and of design.

ELLIS F. LAWRENCE, A. I. A.

TO STANDARDIZE SPECIFICATIONS

Since Secretary Hoover made the discovery that wastages in six basic industries average 49 per cent of all the time, effort, labor and material put into them, there has been a general movement to standardize other materials such as roofing, brick, tile, magazine paper, etc.

The latest subject to come to the attention of the Bureau of Simplification, we hear, is the question of specifications for buildings. According to Mr. Sullivan Jones, State Architect for New York, 73 per cent of the families of New York State cannot afford to live in houses, let alone purchase them, at the present cost of construction. Commenting further on the subject Mr. Jones is quoted as saying:

"There is a tremendous need for unifying practice in the matter of writing specifications. All of us write specifications, and all of us who try to read specifications realize what a mess most of them are and how difficult it is to extract the information from them which they contain.

"There is a very simple formula which you can all work on. A specification really consists of three parts. The first part can be expressed by the word 'Where.' Let us say distribution. The second by the word 'What' (the material). The third by the word 'How' (the application).

"Where? What? How?

"The what and the how can be standardized. The 'Where' is all that we really need to write into the specification. Those are the paragraphs which apply the standards to the particular job. If that were done, or if the attempt were made, we would soon find out where our standards were lacking.

"That involves another question, which is the question of relating specifications to the drawings. There is a tremendous amount of confusion there. They are redundant. They are in conflict. With the standard specification you could take a good deal of information off your drawings.

"One architect for whom I have the highest admiration as a practitioner indicates no materials whatsoever on his drawings."

ARCHITECT NO LONGER TO BLAME

[Journal of Electricity]

One of the difficulties in the way of more complete home electrification has been the lack of adequate wiring at the time a home was built. Many fine homes, to be occupied by those who could well afford the most extensive application of electrical equipment and who would have enjoyed its use, have been constructed with provision only for the most elementary use of electricity. In many cases this use has been confined to lighting only and there are many cases of record where even a limited number of auxiliary outlets was not provided.

Inasmuch as the architect generally is credited with the writing of all specifications for buildings of his design and supervision, it has been felt that the lack of wiring provision has been due to his indifference. However, in a recent survey made by The Architect and Engineer, it was shown that architects are now rather keenly alive to

the importance of electricity in the home. Eighty-one per cent of the questionnaires returned indicated that even though the builder of a residence or apartment building did not indicate a desire for an electric range, water heater or air heaters, the architect recommended the installation of proper wiring to permit later tenants or owners to use such equipment. This is surely a long step ahead in the provision of electrical comfort in modern homes and such initiative on the part of the architects should be met with the hearty co-operation of the electrical industry.

AN architect, with a real vision of his great profession, should give personal attention to the progress of his men. He too seldom realizes that the men in his employ, who are to be the future architects of his community, are permanently influenced by his own standards of ethics, design and construction.

Passing of Distinguished Architect

The death of Architect Bertram Grosvenor Goodhue occurred suddenly at his home in New York City, April 23, of heart disease. Mr. Goodhue was stricken as he entered his home after attending a theater and died before medical aid could be secured. Mr. Goodhue only recently visited the Pacific Coast. He had a winter home at Montecito, near Santa Barbara, where a number of beautiful homes are monuments to his genius.

Mr. Goodhue was born in Pomfret, Conn., in 1869 and was educated at Russell's Collegiate and Commercial Institute at New Haven and at Trinity College. From 1891 until 1908 he was a member of the architectural firm of Cram, Goodhue & Ferguson of Boston, Mass. Since that time he had practiced under his own name.

One of Mr. Goodhue's last commissions was the designing of the central public library building to be erected at Normal Hill Center in Los Angeles at a cost of $1,500,000. Carleton M. Winslow of Los Angeles was associated with him on this commission. Working plans for this building are now being completed in Mr. Winslow's office in Los Angeles.

Mr. Goodhue is perhaps best known on the Pacific Coast as the creator of the architectural scheme of the Panama-California exposition at San Diego in 1915. The buildings of the California quadrangle were designed by him. Mr. Winslow came to the Pacific Coast at that time as the representative of Mr. Goodhue while the exposition buildings were being erected.

It was as an exponent of Spanish architecture that Mr. Goodhue achieved greatest fame, but many notable structures were designed in Gothic by the firm of Cram, Goodhue & Ferguson while he was connected with it. His firm designed the military academy buildings at West Point and the Nebraska state capitol, both of which commissions were won in competitions. Mr. Goodhue attracted public attention by his design over the bride's door at St. Thomas church, New York, in which a dollar sign was interwoven with a maze of Gothic detail. This design was part of an emblem to portray the types of life of Fifth avenue. Many of the clergy protested that the design was false in spirit.

Mr. Goodhue was a fellow of the American Institute of Architects, member of the National Institute of Arts and Letters and the Architectural League of New York. He was author of a book entitled "Mexican Memories" and contributed to "Spanish Colonial Architecture in Mexico."

Ray Frederick Coyle

Mr. Ray Frederick Coyle, artist of wide acquaintance in San Francisco and the bay region, member of the Bohemian Club and veteran of the French army, died suddenly of appendicitis in April.

Ray Coyle was a son of the late Rev. Robert F. Coyle, pastor of the Oakland First Presbyterian church, and was born in Fort Dodge, Iowa, thirty-nine years ago.

Following his education in Oakland and Denver schools he took a bachelor of science degree at Princeton and a doctor of science degree at the University of Edinborough in Scotland. He had a reputation for literary and artistic work in his college days and after his graduation, went into the interior decorating business in which he was engaged in San Francisco offices at the time of his death.

Besides much noteworthy work done for the Bohemian Club, he designed the mural decorations in Plymouth Congregation church, illustrated magazine articles, and has left evidences of his skill in many homes and offices of the San Francisco bay region.

Willis E. Dwyer

The members of the Washington State Chapter of the American Institute of Architects mourn the sudden passing of Mr. Willis E. Dwyer, who, since his connection with the Chapter, had taken a lively interest in its affairs and had been working whole-heartedly to maintain the high standing of the profession. On the recommendation of his fellow members in the Chapter, he was at the time of his death about to advance to full Institute Membership. He was a man greatly respected by all who knew him and deeply loved by his close friends.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

Competition for Masonic Temple

A competition has just been concluded at Portland, Oregon, and announcement of the winner is expected shortly, the program calling for a Masonic Temple design to cost $750,000. A special committee composed of Messrs. E. V. MacNaughton, A. H. T. Williams and Robert Gordon was appointed by the Masonic Orders of Portland to take charge of the program and this committee appointed Mr. Chas. D. James of Portland its architectural advisor. The following architects submitted designs: Messrs. Knighton & Howell, Morris Whitehouse, Sutton & Whitney, Lawrence, Holford & Bean, J. V. Bennes and Edward A. Miller. The winner of the competition will be given the usual fee for preparing the plans and superintending construction of the building, besides a special prize of $1000.

Architect Sues for Fee

Architect Frederick S. Harrison of Sacramento has filed suit in the Superior Court in that city against the Herald School District, formerly known as the Alabama School District, to recover $340.08 he says is due on a contract by which he supervised the construction of a school building in 1922. By the terms of the contract, Mr. Harrison says the trustees of the district agreed to pay him 6 per cent of the total cost of the building for his services, which amounted to $700.08. He says only $360 was paid to him.

Is Entitled to the Honor

Architect Edwin Bergstrom of Los Angeles has recovered from several days confinement to his home by illness. Mr. Bergstrom is the choice of the Pacific Coast Chapters, American Institute of Architects, for election to the vice-presidency of the Institute at its annual meeting this month. Mr. Bergstrom has done splendid work in helping to promote the interests of the Institute in Southern California and is deserving of the honor which his fellow members wish to confer upon him.

Architectural Exhibition

The members of Washington State Chapter, A. I. A., will hold an architectural exhibition in the galleries of the Seattle Fine Arts Society during the month of June.

Dean and Dean Busy

Architects Dean & Dean of Sacramento have new work on the boards or under construction as follows: Two-story $16,000 residence in Sacramento for William Hart; Municipal swimming pool at Lincoln, Placer county; a two-room school house at Ryer Island; alterations to cost $75,000 to the Roman Catholic cathedral, Sacramento; one-story and basement reinforced concrete store building at Woodland to cost $15,000; two-story brick and stucco Parochial school at 9th and F streets, for St. Joseph's Parochial school to cost $70,000; a one-story masonry construction bank building at Yuba City for the Producer's Bank; a one-story concrete school building at East Nicolas to cost $22,000; a one-story brick store building at 12th and K streets, Sacramento, to cost $50,000

Who's Who in Architecture

The American Federation of Arts, 1741 New York avenue, N. W., Washington, D. C., proposes to publish a "Who's Who in Architecture" as the leading feature of volume 21 of the American Art Manual. This directory will correspond to the Who's Who in Art, a directory of painters, sculptors, illustrators and etchers, which appeared in alternate volume of the Art Annual for some years. Architects who desire to be listed are advised to communicate at once with the association.

Six-Story Apartments

Architect Edward E. Young, 2002 California street, San Francisco, has completed plan and bids have been taken for a six-story Class C reinforced concrete apartment house, having four stores and thirty-three apartments, to be erected on the north east corner of Sutter and Hyde streets, San Francisco. The building is expected to cost in the neighborhood of $100,000.

Most Beautiful Building

The Seattle Fine Arts Society will award annually a tablet to the owner of the most beautiful building erected in the city beginning at the close of the current year 1924, and covering the twelve months from January 1st. The architect or architects designing the building will be given a certificate of honor by the Society.

Personal

Architects Marston, Van Pelt & Maybury of Pasadena have opened supplementary offices at room 422 Union Oil building, Los Angeles. The firm will retain their present offices and drafting department at 25 Euclid avenue, Pasadena.

Architects Losekann and Clowdsley of Stockton have dissolved partnership and both Joseph Losekann and John Upton Clowdsley will pratice the profession independently under their own names. Mr. Losekann will retain offices in the Elks building and Mr. Clowdsley has moved to 309 Exchange building.

Mr. Chas. A. Lee, engineer of the San Francisco water board, has been engaged by the Los Angeles public service commission as consulting expert in the matter of certain legal complications arising from water rights along the Owens Valley project.

Architect Edward L. Mayberry of Los Angeles is enjoying a three weeks' business trip to New York City, in connection with a large Los Angeles building project. While East Mr. Mayberry will pay his school, the Massachusetts Institute of Technology, a visit.

Architect Ernest Irving Freese is now located at Highland Park, with office at 5566 Pasadena avenue, Los Angeles.

Architect Harwood Hewitt has moved his offices from Van Nuys building to room 515 Harris building, 110 W. Tenth street, Los Angeles.

Mr. Stephen Child, landscape architect and consultant in city planning, has opened an office in the Merchants Exchange building, San Francisco. Mr. Child also maintains an office in the Maryland building, Washington, D. C.

Mr. L. F. Mulqueen, architectural designer, has moved from the Roberts building to 425 Pacific Finance building, Los Angeles.

Architects Walker and Eisen of Los Angeles have moved their offices to larger quarters in the Great Republic Life building, Eighth and Spring streets, occupying very nearly the entire seventh floor.

Architects Charles W. Mc Call, Charles T. Davis and Wythe and Logan have moved their offices from the Central Bank building, Oakland, to the new Alameda County Title Insurance building, at Fourteenth and Franklin streets. Other architects who have moved into this buidling are Messrs. C. W. Dickey, Miller and Warnecke and W. R. Yelland.

It is announced that Architect Edwin L. Snyder has opened offices for the practice of his profession at 2809 S street, Sacramento. Catalogs and samples from material men would be appreciated.

Construction Courses

At the request of the Los Angeles Chamber of Commerce, the Southern California Chapter of the American Institute of Architects, the Associated General Contractors of America, the Builders' Exchange and numerous manufacturers of building products, a course in building materials, construction of cement, tile and brick work and road work has been established at Roosevelt high school in Los Angeles.

This is said to be the only course of its kind taught in a high school in the United States. Mr. Thomas Fellows is the instructor.

Architect's Widow Excused

Mrs. Kate A. Lenzen was yesterday excused from sitting with the jury that will head the $50,000 damage suit brought by James J. Collins, building inspector, against George W. Shorten for injuries incurred in a fall caused, it is alleged, by faulty building construction, when it was learned that her husband, Theodore W. Lenzen, architect, had planned the structure. With good-natured laughter on both sides in Superior Judge Shortall's court, the attorneys decided that a good wife would refuse to condemn any enterprise that her husband had any connection with.—San Jose Mercury.

Ten-Story Apartment House

Plans have been completed by Architect Frederick W. Quandt, Humboldt Bank building, San Francisco, for the construction of the 10-story and basement Class A residence apartment house on Broadway between Octavia and Laguna street, San Francisco, for the Broadway Community Apartments, Incorporated. There will be one large apartment to a floor. Building will cost $175,000.

Four-Story Building

Plans have been prepared by Walter Stephens, 251 Kearny street, San Francisco, and the contract has been awarded to J. L. McLaughlin of the same address for a four-story basement and mezzanine reinforced concrete loft building at Mission and Julia streets, San Francisco. Structure is to cost approximately $175,000. It will be equipped with automatic fire sprinklers.

Power Plant for Shanghai, China

Plans have been completed by Architects Bakewell & Brown of San Francisco for a Class A power plant to be built at Shanghai, China, by the Federal Telegraph Company. The structural work for the building was designed by Engineer C. H. Snyder. Construction of the building is to start this summer, all materials to be purchased in the United States.

Who Made the First Paper?

WHO made the first sheet of paper? The credit for this achievement, according to The American Forestry Association, is due to a scholarly eunuch named Ts'ai-lun of China, a member of the court of the Han dynasty, in the year 75 A. D. For his achievement, Ts'ai-lun was, forty years later, raised to the rank of marquis. It appears that Ts'ai-lun, believing that old bamboo tablets and stylus had outlived their usefulness, set for himself the task of making new writing materials. After thirty years he produced the first hand sheet of paper, and it was made from the bark of a mulberry tree.

Prior to Ts'ai-lun's day, leaves of trees and various barks used in crude form had served the Egyptians, Romans, and other nations as paper. Ts'ai-lun, however, did not use the crude inner bark of the tree as the final material on which to make his records. He did use the bark, but merely as a raw material from which he produced a finished sheet of paper by a series of processes which, crude as they may seem today, were the forebears of paper manufacture today.

For eight centuries after Ts'ai-lun's discovery, China monopolized the art of paper making. She managed to keep the process secret until it was captured by the Arabs, who improved upon it by forsaking the mulberry tree and using linen or cotton rags instead. Thus wood, as a raw material for paper making passed into oblivion until the dawn of the nineteenth century. Even up to 1860, rags were the principal material used in paper making.

Most books on paper making date the first wood pulp process from 1840, but The American Forestry Association cites evidence to show that it was forty years earlier. A quaint little volume, dedicated to George the Third, was printed in London in 1880. The writer of the book was one Mathias Koops. Most of the pages of the book are made from straw, but the appendix appears quite different, and as to it, Koop says:

"The following lines are printed on paper made from wood alone, the produce of this country, without any intermixture of rags, waste paper, bark, straw, or any other vegetable substance."

What wood Koop used, or what process he employed, is not known, but it is now historically conceded that he made paper from wood pulp, forty years before the ground wood process was officially discovered.

Special Architects' Representatives

Messrs. G. A. Roth and E. H. Cowan, formerly associated with the Califelt Insulation Company, 216 Pine street, have been appointed special architects' representatives in San Francisco and the Bay District in promoting the sales of all Johns-Manville materials. This will be good news to architects who from time to time require special and prompt information regarding the uses and application of various Johns-Manville products, including asbestos roofing, deadening felts and accoustical corrections. Both Mr. Roth and Mr. Cowan are well known to the San Francisco architectural profession and their affiliation with the Johns-Manville interests will be welcomed.

BOOK REVIEWS

Edited by
CHARLES PETER WEEKS

Portland Cement Prices: Their Basis, Character and Present Position. By Henry Parker Willis and John R. B. Byers. The Ronald Press Company, New York. 123 pages. Cloth $1.25.

The cement producers insist that they are merely an average group of normal competitive business concerns which have supplied the market with a dependable product at a fair price and with only moderate profits to themselves. Strong in this conviction, a group of eastern producers of cement asked Dr. Willis and Professor Byers to make a careful analysis of cement prices and the economic processes by which they are determined.

The result is a valuable collection of data bearing not only upon the cement industry and the determination of cement prices, but also upon the meaning of uniformity and stability in prices; the relation of the latter to combination and competition in price-making; the tests or criteria of fair prices, normal prices, competitive prices; and finally, the amount, rate, and reasonableness of the profits which eastern cement producers have realized in recent years.

As was said by Judge Knox in his recent finding against the Cement Manufacturers Protective Association: "There is, I take it, no need to find that the prices at which defendants sold cement during the period over which the Association has functioned, were excessive. Indeed, as compared with the rise in the prices of other basic commodities, it is possible to assert that the quotations on cement advanced less than the others."

The book is not a partisan plea for the cement industry. It is a collection of fundamental data, accompanied by a scholarly analysis of their meaning, and in the authors' words, "the final expressions of opinion presented are those which have been independently reached by the writers." The disinterested reader will not swallow these opinions without critical examination.

Honor Awards for Architectural Work in Los Angeles

THE honor awards for architectural work of exceptional merit executed during the year 1923 in and around Los Angeles were presented at the April meeting of the Southern California Chapter of the American Institute of Architects. The custom of giving recognition to particularly meritorious work in architecture and allied arts was inaugurated by the Southern California Chapter for the purpose of encouraging an appreciation of these arts. Since the Chapter recognizes that to properly execute an architectural project requires the cooperation of the owner, architect and contractor, certificates of appreciation are presented to the owners and contractors as well as the architects of the works judged to possess great merit. The jury was composed of Architects Ernest Coxhead and John Galen Howard of San Francisco and Mr. William Parsons of Chicago.

Following are the awards by groups and sections:

GROUP I—DWELLINGS, SINGLE

Section A—Single detached dwellings, 6 rooms and under—

Residence of Mrs. Lynn Helm, 220 Witmer street, Los Angeles; Witmer & Watson, architects; T. C. Youngs, contractor.

Residence of George S. Hunt, 2280 Parkview, Linda Vista; Marston, Van Pelt & Maybury, architects; John H. Simpson, contractor.

Residence of F. H. Case, Ellendale and Hill Dr., Eagle Rock; Harbin F. Hunter, architect; Birch O'Neal, contractor.

Section B—Single detached dwellings 7 to 12 rooms—

Residence of Mrs. Carleton M. Winslow, 11 Laughlin Park, Los Angeles; Carleton M. Winslow, architect; Harold E. Phillips, contractor.

Residence of Mrs. F. E. Leupp, 620 S. Hill street, Pasadena; Johnson, Kaufmann & Coate, architects; Hansen & Son, contractors.

Residence of Mrs. M. L. H. Walker, 1453 E. California street, Pasadena; E. W. Neff, architect; A. Carpenter & Son, contractors.

Section C—Single detached dwellings, 13 rooms and over—

Residence of Mrs. Reginald D. Johnson, 1541 Lombardy road, Pasadena; Johnson, Kaufmann & Coate, architects; John Mayer, contractor.

Residence of Mrs. K. C. Strong, Las Tunas road, Santa Barbara; Johnson, Kaufmann & Coate, architects; Snook & Kenyon, Santa Barbara, contractors.

Residence of H. O. Wheeler, 2020 Edgemont, Hollywood; Witmer & Watson, architects; A. E. Westberg, contractor.

GROUP II—MULTIPLE DWELLINGS

Section A—Multiple dwellings, individual kitchens, 4 apartments and under—

Witmer Bros. Company, owner; Witmer & Watson, architects; A. E. Westberg and John V. Gierding, contractors.

Section F—Multiple dwellings, club type, country—

Ojai Valley Country Club, Edward Drumond Libbey, owner; A. Carpenter & Son, contractors.

No awards in Sections B, C, D, E and G.

GROUP III—COMMERCIAL BUILDINGS

Section A—Mercantile buildings, 4 stories and under—

Thorp building, 7th and Parkview, Los Angeles (owned by Spencer Thorp); Morgan, Walls & Clements, architects; Robert Millsap, contractor.

Magnin Shop, 6336 Hollywood boulevard, Hollywood; Myron Hunt and H. C. Chambers, architects; Macdonald & Kahn, contractors.

Section C—Industrial buildings—

U. S. postoffice garage, 718 E. Third street, Los Angeles (owned by U. S. Building Corp.); A. C. Zimmerman, architect; Wm. A. Larkins, contractor.

Section D—Industrial buildings not included in Sections "A," "B" or "C"—

Store and office building, 25 S. Euclid avenue, Pasadena; Marston, Van Pelt & Maybury, architects; W. A. Taylor, contractor.

Home Commercial & Savings Bank, 945 Fairoaks street, Pasadena; Edwin Bergstrom, architect; Wm. A. Larkins, contractor.

No award in Sec. B buildings, 5 stories and over.

GROUP IV—SEMI-PUBLIC AND CULTURAL BUILDINGS

Section C—Hospitals, Detention Homes, Etc.

West Wing, Pasadena Hospital, Congress and Fairmont streets, Pasadena (owner, Pasadena Hospital Association); Myron Hunt and H. C. Chambers, architects; Wm. Crowell, contractor.

No awards in Secs. A, religion; B, education, and D, cultural buildings.

GROUP V—SCHOOL WORK
(Built by civic taxes or bonds)

Section A—High schools—

George Washington Junior High School, Raymond and Dakota streets, Pasadena (owned by city of Pasadena); Allison & Allison, architects; Anton Johnson Co., contractors.

Section B—Intermediate schools and under, 8 class rooms and under—

Junipero Serra Grammar School, Pasadena (owned by city of Pasadena); Cyril Bennett, architect; H. E. Tabor, contractor.

No awards in Sec. C, 9 class rooms and over.

No awards in Group VI, public work, Group VII, monuments; Group VIII, group planning; Group IX, city or community planning; Group X, landscape work; Group XI, any of the fine arts as distinguished from architecture.

For craftsmanship in metal work, B. B. Bell and Norman Bishop.

Santa Barbara's Best Examples of Architecture

The ten most notable examples of architecture, five most notable examples of landscape gardening and five most notable small houses approximating $5000 in cost in Santa Barbara and its environs, have been designated by a jury selected by the architects of Santa Barbara and appointed by the president of the city planning commission. The members of the jury were: Architects Elmer Grey, David C. Allison and Pierpont Davis of Los Angeles, and Messrs. Fernand Lungren, artist, and William H. Conklin, art connoisseur, of Santa Barbara.

As the ten most notable examples of architecture in Santa Barbara and vicinity, the jury names the following (in alphabetical order, no priority having been attempted):

County National Bank & Trust Co., 1000 State street; Myron Hunt, architect.

Daily News building, city hall plaza; George Washington Smith and Mr. Maybury, architects.

Henry Dater residence, 84 Sycamore Canyon road; Bertram G. Goodhue, architect.

Mrs. Kathryn Emery residence, 5 Pomar lane; Soule, Murphy & Hastings, architects.
J. W. Gillespie residence, 29 Para Grande Lane; Bertram G. Goodhue, architect.
J. P. Jefferson residence, Ridge road; Reginald Johnson, architect.
W. P. Lindley residence, 197 Hot Springs avenue; George Washington Smith, architect.
Old Santa Barbara Mission.
El Paseo buildings, 21-23 East de la Guerra street; James Osborne Craig, architect.
Major J. H. Pesine residence, 913 San Andreas street; Myron Hunt, architect.
Honorable mention was given to the following:
Carrillo building, State and Carrillo streets; Marston, Van Pelt & Maybury, architects.
Jos. G. Coleman, Jr., residence, 55 San Leandro Lane; Reginald Johnson, architect.
Bertram Goodhue residence, East alley road; Bertram Goodhue, architect.
W. S. Gring residence, Spring road; James Osborne Craig, architect.
Craig Heberton residence, 40 Middle road; George Washington Smith, architect.
W. E. Hodges residence, 2112 Santa Barbara street; Soule, Murphy & Hastings, architects.
Bernard Hoffman residence, 2420 Garden street; James Osborne Craig, architect.
J. Y. Parker residence, 1600 Paterna road; Floyd E. Brester, architect.
George Washington Smith residence, 17 Mesa road; George Washington Smith, architect.
Paseo de la Flores, 818 State street; Mrs. James Osborne Craig, designer.
Granada Development, Nopal and Anapamu streets; Kirkhuff and Schaaf, architects.
As the five most notable examples of gardens, the jury unanimously selected the following in alphabetical order:
Henry Dater garden, 84 Sycamore Canyon road (Bertram Goodhue).
J. W. Gillespie garden, Para Grande Lane (Bertram Goodhue).
Craig Heberton garden, 40 Middle road.
David Jones garden, Alston road (Adler, Chicago).
George Owen Knapp, upper garden, Sycamore Canyon road (Chas. D. Adams, landscape, consulting architect for planting only; Carleton M. Winslow, architect).
As the five most notable examples of small houses, the jury selected the following:
R. S. Hyde, beach cottage, Montecito; Carleton M. Winslow, architect.
Dr. R. M. Culler, house, 2014 State street; Soule, Murphy & Hastings, architects.
William H. Parker house, 2016 State street; Soule, Murphy & Hastings, architects.
Bernard Hoffman's guest cottage, Mission Canyon; James Osborne Craig, architect.
John Frederic Murphy house, 707 Moreno road; John Frederic Murphy, architect.

Construction Again Deferred

The period of construction, without government permit or supervision of temporary structures in the area of Japan affected by the earthquake, has been extended for six months. Shortly after the disaster the government prohibited permanent construction for a period of three years pending completion of new city plans and building regulations, and at the same time removed all limitations on temporary structures for a period of six months. The present decision simply extends this latter period for another six months because of the urgent necessity for temporary shelters and the inability of the government to agree on definite relief and construction measures prior to the dissolution of the diet.

Weeks & Day Busy

New work in the office of Messrs. Weeks & Day of San Francisco includes a five-story reinforced concrete store and office building at San Jose for the Sainte Claire Realty Company, cost $400,000; a reinforced concrete theatre at Palo Alto to cost $200,000; a twelve-story steel frame hotel on Ocean View avenue, Long Beach, to cost $1,500,000 and a large residence in St. Francis Wood for Mr. Cahill.

Masonic Temple

Architects Tuttle & Tuttle of Oakland have completed drawings for a two-story brick store and lodge building for the Ukiah Masonic Temple Association, estimated to cost $45,000. The same architects have completed drawings for a hollow tile church at Burlingame for the First M. E. Society, which is to cost $70,000.

Plumbing Supply Building

Architect W. O. Lewis, Bacon Block, Oakland, is preparing drawings for a one and two-story concrete wholesale plumbing supply house for P. E. O'Hair & Company, San Francisco. The building will be erected on Bryant street west of 7th, San Francisco.

Fresno School

Architects Swartz & Ryland, Rowell building, Fresno, are preparing plans for a $60,000 two-story school building for the Fresno City School District. They are also preparing plans for a 6 class room frame school to cost $35,000 at Riverdale, Fresno county.

Berkeley Residence

Plans have been completed by Architect W. H. Ratcliff, Jr., for a $15,000 frame residence to be built in Claremont Court, Berkeley, for Mr. J. Sub Johnson. Mr. Ratcliff has recently let a contract for a two-story frame apartment house for Mr. Joseph Davis on Arch street, Berkeley, at an approximate cost of $40,000.

Will Spend Summer Abroad

Architect Arthur Brown, Jr., and Mrs. Brown, departed from San Francisco the latter part of April and sailed from New York May 3 on the Olympic for Europe. Mr. Brown will serve on the jury of architecture at the International Exhibition of Fine Arts.

Los Angeles Hotel

The Davenport Hotel Corporation will spend $4,000,000 in building and equipping a new hotel, theatre and store building on Hollywood boulevard, Los Angeles, from plans by Architects Curlett & Beelman of Los Angeles.

Cost of Building Doubles in Last Ten Years

BUILDING costs in the United States, in the midst of what economists have agreed is the country's greatest construction boom, have doubled in the last ten years, according to a recent announcement by the National Industrial Conference Board. The board summarized the results of a study it has been making into the national building situation. A noteworthy development by the study is that costs of labor and of materials stand at exactly the same increased levels, for the first time since 1920.

While in New York City the building crafts receive high wages, the study shows that last month they were the highest in the country in only 10 out of 25 trades. Graphic charts accompanying the board's statement reveal the nation-wide character of rising costs, not alone in wages, but in all materials entering into building. Other cities reporting uniformly high wages are Chicago, Cleveland, Pittsburgh, St. Louis and Houston, Texas.

The conference board's investigation covered the leading American cities, and took in all the crafts and the leading elements in building material. Wage figures were based on government and other reports annually in May from 1914 to 1920, and monthly since August of that year.

The general trend of building costs, taken as a whole, as shown by the National Industrial Conference Board's survey, is a tendency downward for materials, and a rising tendency in wages. There was nothing adduced in the survey to indicate appreciable reductions in building costs in the near future, conditions in the United States as a whole being considered.

Making a Record

Mr. George K. Beddoe, associated for fifteen years with the Indiana Limestone Quarrymen's Association of Bedford, Ind., where he gained a reputation among architects throughout the United States for his extensive operations as a cut stone contractor, is said to be making a record in his new position of vice-president and general manager of the Bonded Floors Company, Inc., of Philadelphia.

This position Mr. Beddoe assumed on the first of the year. Since then the company has seen a material increase in its advertising budget, with a corresponding boom in business, and a broadening of policy enabling contractors and retail stores to act as agents and distributors of Bonded Floors, enjoying practically the same privileges as branch offices of the company.

Simplification of Metal Lath

As a result of surveys made in 1922 of sizes and types of metal laths by the Associated Metal Lath Manufacturers, and a conference under the auspices of the Division of Simplified Practice, Department of Commerce, at which manufacturers, architects, builders and builders supply representatives and labor union officials were present, an official publication is about to be issued by the Government Printer covering the simplification of this product. More than 80 per cent of all groups concerned have adopted the simplification recommended reducing from 125 varieties to 24 flat expanded, ⅜ inch expanded and flat rib expanded metal lath, and have been putting the reductions into force for some time.

The recommendations officially adopted were as follows:

Section I.—Flat Expanded Metal Lath.

Weight in pounds per sq. yd. of		
Painted steel	Special metal	Sheets galvanized before fabrication
2.2	2.2	.....
2.5	2.5	2.5
3.0	3.0	.....
3.4	3.4	3.4
Gauges of sheet (U. S. Standard)		
Minimum		Maximum
28		26
28		26
28		24
26		24

Section II.—⅜ inch Rib Expanded Metal Lath.

Weight in pounds per sq. yd. of	
Painted steel	Special metals
2.5	.....
3.0	3.0
3.5	3.5
4.0	.....
Gauges of sheet (U. S. Standard)	
Minimum	Maximum
28	26
28	26
27	24
26	24

Section III.—Flat Rib Expanded Metal Lath.

Weight in pounds per sq. yd. of	
Painted steel	Special metals
2.75	2.75
3.20	3.20
3.75	3.75
4.00	4.00
Gauges of sheet (U. S. Standard)	
Minimum	Maximum
30	28
30	28
29	24
28	24

Section IV.—Sheet Lath—Painted steel sheet lath is to weigh not less than 4.5 pounds per square yard, with corresponding minimum weights in this type of lath made from special metals or from sheets galvanized before fabrication.

Section V.—Expanded and Sheets. Metal lath in all types and weights galvanized after fabrication is to be eliminated.

Section VI.—The industry is to make every effort to direct practice to a consolidation of the pairs of bracketed sizes, Sections I and II in a single weight to replace each pair; this is to be made effective, if possible, at the 1924 conference.

Section VII. All types of lath are to be specified and sold by weight per square yard.

Section VIII.—Manufacturers accepting this recommendation and who so desire, may stamp or tag their product "Made in accordance with U. S. Department of Commerce Simplified Practice Recommendation No. 3."

The action of the makers and users of metal laths forms one of an important group connected with the construction industry who have adopted simplification since Secretary of Commerce Hoover organized the movement for a reduction of excess variety as a measure of increased efficiency, lower costs, more stability of labor, and better service. Among the other groups were makers of rough face brick, smooth face brick, hollow building tile, prepared roofing, range boilers and a number of household articles. Savings of millions of dollars have been effected by simplifications, and more than a hundred other industries are planning similar action.

The Relation of Terra Cotta to the Fine Arts

It is significant that of the five greater arts—architecture, sculpture, painting, music and poetry—terra cotta has a definite place in the first three. The architectural beauty of terra cotta is undisputed. Its adaptability to modeled design is well known. Its color harmonies present limitless opportunities.

Sensing the trend toward color in the development of our national architecture, the Terra Cotta Service Bureau, 128 North Wells street, Chicago, has added to its staff one of the foremost of American colorists, Mr. Thomas A. O'Shaughnessy, and offers his services as a consulting specialist in color, as its additional contribution to the development of a distinctly American architecture.

The Bureau will be pleased to furnish to any architect, upon request and without charge, color criticisms by Mr. O'Shaughnessy, covering any desired building project, and to collaborate in the development of architectural color plans for both exterior and interior treatments in terra cotta. Requests for such co-operation should be addressed to the Bureau, and such requests will receive Mr. O'Shaughnessy's personal attention in the order of their priority.

Distinctive Floors

"Distinctive Floors," is the name of a new booklet just published by the Bonded Floors Company, Incorporated. It illustrates this concern's gold seal brand of treadlite tile and describes the method of laying them for various purposes. In addition to gold seal and Treadlite tile, the Bonded Floors company installs floors of seal rubber tile, a resilient floor of new live rubber, in many beautifully colored marble effects, gold seal battleship linoleum and natural cork tile. The San Francisco offices of the Bonded Floors Company are at 370 Second street.

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Schirmer-Bugbee Company Busy

The office of Schirmer-Bugbee Company in Oakland is busy on plans for a $50,000 commercial garage to be erected on San Pablo, Oakland; a warehouse on 22nd street, Oakland to cost $100,000; a two-story frame apartment house on Glenview avenue for Mr. Weck; a three-story frame apartment house on Excelsior avenue for Mrs. K. L. Lemmon; a two-story English type residenc in Lakeshore Highlands for Mr. F. L. Saylor and a two-story frame and stucco residence in Piedmont for Mrs. C. F. Bryan.

Oakland Office Building

Contract has been awarded to the H. H. Winner Company, Sharon building, San Francisco, to design and build a five-story Class C brick store and office building, containing nine stores and one hundred and twenty offices, 13th and Franklin streets, Oakland, to cost $100,000. The owner is Mr. Carl Raentsch who is also going to build a $100,000 moving picture theatre on Telegraph avenue near Channing Way, Berkeley.

Hotel Alterations

Plans have been completed by Architects Hemmings & Starks of Sacramento for a one-story and basement steel and concrete addition to the Hotel Sacramento, estimated to cost $80,000. The addition will provide lounging room, tea room, banquet hall, coffee shop and approximately sixty new bath and shower rooms.

Athletic Stadium

Messrs. Willis Polk & Company and C. F. Masten, E. Geoffrey Bangs, Thos. F. Chase and Lester W. Hurd, Associates, have been commissioned to prepare plans for the new Athletic Stadium in Golden Gate Park, San Francisco. The funds are to be available from a $200,000 appropriation by the supervisors.

Resumes Architectural Practice

Mr. Creston H. Jensen announces that he has sold his interest in the C. H. Jensen Company to Mr. Don A. Pancoast, and will be associated with Mr. Evan W. Evans in the practice of architecture under the name of Creston H. Jensen, architect, and Evan W. Evans, associated, 74 New Montgomery street, San Francisco.

Move to Larger Quarters

S. F. Bowser & Company have moved their San Francisco office from 612 Howard street to larger and more convenient quarters at Ritch and Brannan streets. Increased demands for tanks and pumps for gasoline and lubricating oils necessitates the expansion. The San Francisco plant will market products in Montana, Idaho, Utah, Oregon, Washington and California.

Residence Beautification

Mr. Emerson Knight, landscape architect, 9 Geary street, San Francisco, has completed designs and construction of a stone wall and stone stairway, wrought iron gate and tile stepping stones for the residence garden of Mr. C. E. Persons, 53 Sunshine avenue in Sausalito.

Twelve-Story Office Building

The Sun Realty Company is to build another skyscraper in Los Angeles, plans having been completed by Architects Curlett and Beelman of that city. The building is to be twelve-stories and basement and will cost $1,350,000.

San Leandro Theatre

Architects Reid Bros. of San Francisco have completed plans for $100,000 reinforced concrete moving picture theatre to be built on the site of the Odd Fellows Hall at San Leandro for Mr. J. Hoorwitz of Hayward.

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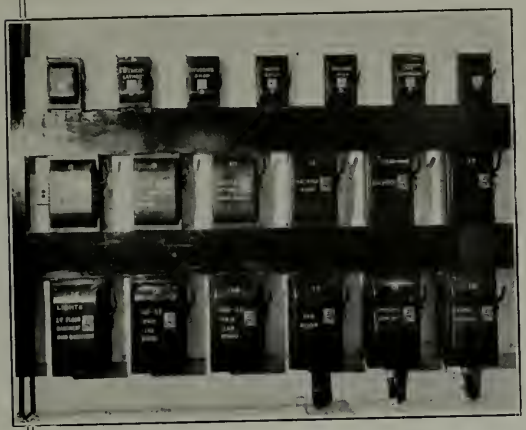

T

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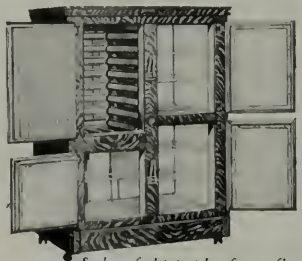

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Present Cost of Building Materials

THESE quotations are based on reliable information furnished by the San Francisco material houses. Date of quotations, May, 1924.
All prices San Francisco or Oakland. For country work add freight and cartage to prices given.

Bond—1½% amount of contract.

Brickwork—
Common, $35.00 per 1000 laid.
Face, $75.00 per 1000 laid.
Enamel, $150.00 per 1000 laid.
Common, f. o. b. cars, $15.50, plus cartage.
Face, f. o. b. cars. $50.00 per 1000, carload lots.

HOLLOW TILE FIREPROOFING (f. o. b. cars in carload lots.)

12x12x3 in.	$ 96.00 per M
12x12x4 in.	108.00 per M
12x12x6 in.	156.00 per M
12x12x8 in.	243.75 per M

Hod carriers, $6.50 per day.
Bricklayers, $10.00 per day.
Lime—$2.25 per bbl.; carload, $2.15

HOLLOW BUILDING TILE f. o. b. cars in carload lots.)

8x11½x5½	$108.00
6x11½x6½	85.00

Composition Floors—22c to 50c per sq. ft. In large quantities, 22c per sq. ft.

Composition Stucco—$1.90 to $2.10 per sq. yard (applied).

Concrete Work (material at San Francisco bunkers)—

No. 3 rock	$2.25 per yd.
No. 4 rock	2.30 per yd.
Niles pea gravel	3.50 per yd.
Niles gravel	2.35 per yd.
Niles top gravel	2.75 per yd.
City gravel	2.15 per yd.
River sand	1.75 per yd.
Delivered bank sand	1.00 per yd.

SAND

Del Monte	$1.25 to $1.50 per ton
Fan Shell Beach (Car lots, f. o. b. Lake Majella)	$2.50 to $3.00 per ton
Swedish cement	$2.68 per bbl.
Belgian cement	2.65 per bbl.
Cement (f. o. b. cars)	3.01 per bbl.

Rebate for sacks, 10c each.

Atlas "White"	$ 9.75 per bbl.
Medusa "White"	$ 9.95 per bbl.
Forms, Labors average	$27.00 per M

Wage—

Concrete workers	$5.00 per day
Cement finishers	8.50 per day
Laborers	5.00 per day

Dampproofing—
Two-coat work, 25c per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $5.00 per square.
Hot coating work, $2.00 per square.
Wage—Roofers, $8.00 per day.

Electric Wiring—$5.00 to $10.00 per outlet for conduit work (including switches).
Knob and tube average $2.50 to $5.00 per outlet.
Wage—Electricians, $8.00 per day.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies. Average cost of installing an automatic elevator in 4-story bldg., $3000; direct automatic, about $2800.

Excavation—
$1.25 per yard, if sand. Teams, $10.00 per day. Trucks, $21 to $27.50 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $105.00 per balcony.

Glass—(Consult with manufacturers.)
21 ounce, 16c per square foot.
Plate, $1.00 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 30c per sq. ft.
Obscure glass, 28c per square foot.
Note—Add extra for setting.
Wage—Glaziers, $8.00 per day.

Heating—
Average, $2.25 per sq. ft. of radiation, according to conditions.
Wage—Steamfitters, $9.00 per day.

Iron—Cost of ornamental iron, cast iron, etc., depends on designs.
Wage—Iron workers, bridge and structural, $9.00 per day.
Architectural iron workers, $7.00 per day.

Lumber—(Prices delivered to bldg. site)
Common, $34.00 per M (average).
Com'n O.P. (select, avrg.....$37.00 per M

Flooring—

1 x 6 No. 3—Form lumber	$23.00 per M
1 x 4 No. 1 flooring	60.00 per M
1 x 4 No. 2 flooring	58.00 per M
1 x 4 No. 3 flooring	45.00 per M
1 x 6 No. 2 and better flooring	57.00 per M
1¼ x 4 and 6 No. 2 flooring	60.00 per M

Slash grain—

1 x 4 No. 2 flooring	50.00 per M
1 x 4 No. 3 flooring	42.00 per M

No. 1 common run to

T. & G.	$34.00 per 1000
Lath	5.00 per 1000

Shingles—(Add cartage to prices quoted)

Redwood, No. 1	$1.10 per bdle.
Redwood, No. 2	.90 per bdle.
Red Cedar	1.25 per bdle.

Building Paper—

1 ply per 1000 ft. roll	$6.25
2 ply per 1000 ft. roll	9.60
3 ply per 1000 ft. roll	14.55
Sash cord com. No. 7	1.25 per 100 ft.
Sash cord com. No. 8	1.40 per 100 ft.
Sash cord spot No. 7	1.90 per 100 ft.
Sash cord spot No. 8	2.30 per 100 ft.
Sash weights cast iron	60.00 Ton
Nails, $4.25 base.	

Hardwood Flooring—

⅞x3¼" T & G Maple	$137 M ft.		
1½x2¼" T & G Maple	140 M ft.		
⅞x3½ Sq. Edge Maple	116 M ft.		
	⅞x2¼" T&G	⅞x2" T&G	⅞x2" Sq. Ed
Clr. Qtd. Oak	$179 M	$124.00 M	$156 M
Sel. Qtd. Oak	135 M	92.50 M	114 M
Clr. Pla. Oak	140 M	92.50 M	114 M
Sel. Pla. Oak	124 M	80.00 M	97 M
Clear Maple	135 M	81.00 M	
Orion	140 M	100.00 M	100 M
Bagac	130 M	90.00 M	90 M
Laying and Finishing	16c ft.	15c ft.	13c ft.

N. B.—Materials and labor are plentiful at present time, with tendency to lower prices.

Wage—Floor layers $9.35 per day.

Millwork—

O. P., $100 per 1000. R. W., $120 per 1000.
Double hung box window frames, average) with trim, $8.00 and up, each.
Doors, including trim (single panel), $10.50 and up, each.
Doors, including trim (five panel), $8.50 each.
Screen doors, $3.50 each.
Cases for kitchen pantries seven feet high, per lineal foot, $7.50 each.
Dining room cases, $8.00 per lineal foot.
Labor—Rough carpentry, warehouse heavy rraming (average) $16 per m.
For smaller work, average, $28.00 to $35.00 per 1000.
Wage—Carpenters, $8.00 per day.
Laborers—$5.00 per day.

Marble—(Not set), add 40c to 60c per ft. for setting.

Columbia	$1.50 sq. ft.
Alaska	1.50 sq. ft.
San Saba	3.15 sq. ft.
Tennessee	1.90 sq. ft.
Verde Antique	3.50 sq. ft.
Westfield Green	3.50 sq. ft.

Wages—Marble setters, $8.00 per day; helpers, $5.50 per day. Marble polishers and finishers, $6.00 per day.

Painting—

Two-coat work	30c per yard
Three-coat work	45c per yard
Whitewashing	5c per yard
Cold water painting	9c per yard

Turpentine, $1.25 per gal. in cases and $1.10 per gal. in tanks.
Raw Linseed Oil....$1.08 per gal. in bbls.
Boiled Linseed Oil.. 1.10 per gal. in bbls.
Pioneer white and red lead, 13½c lb. in one-ton purchases; 14¼c lb. for less than 500 lbs.
Wage—Painters, $8.00 per day.
Note—Accessibility and conditions cause wide variance of costs.

Patent Chimneys—

6-inch	$1.50 lineal foot
8-inch	1.75 lineal foot
10-inch	2.25 lineal foot
12-inch	3.00 lineal foot

Pipe Casings—14" (average), $7.50 each.

Plastering—(Including Lathing)
Interior, on wood lath, 60c per yard.
Interior, on metal lath, $1.25 per yard.
Exterior, on brick or concrete, $1.30 per yard.
Portland White, $1.75.
Interior on brick or terra cotta, 60c to 70c per yard.
Exterior, on metal lath, $1.75 to $2.00 per yard.
Wood lath, $5.00 a yard per 100.
Metal studding, $1.25 to $1.50 per yard.
Suspended ceiling and walls (metal furring, lathing and plastering), $2.00 per yard.
Galv. metal lath, 33c and up per yard, according to gauge and weight.
Lime, f. o. b. S. F. warehouse, $2.50 bbl.
Lime, bulk, per ton of 2000 lbs., $19.50
Hardwall plaster, $15.40 per ton, f. o. b. warehouse. (Rebate on sacks, 15c.)
Finishing plaster (carload lots), $19.00.
Hydrate of lime, $19.50 per ton, f. o. b. warehouse.
Wage—Plasterers, $10.00 per day.
Lathers, $8.00 per day.
Hod carriers, $7.00 per day.

Plumbing—
From $70.00 per fixture up, according to grade, quantity and runs.
Wage—Plumbers, $9.00 per day.

Reinforcing Steel—
Base price for car load lots, $3.80 per 100 lbs., f. o. b. cars on docks.
Average cost to install, $25 per ton.
Wage—Housesmiths, $8.00 per day.

Roofing—
Five-ply tar and gravel, $6.00 per square for 30 squares or over.
Less than 30 squares, $6.25 per square.
Tile, $35.00 to $50.00 per square.
Redwood Shingles, $12.00 per square in place.
Cedar Shingles, $12.00 per sq. in place.
Reinf'd Pabco, 7 yr. roof, $7.50 per sq.
Reinf'd Pabco, 10 yr. roof, $10.25 per sq.
Reinf'd Pabco, 20 yr. roof, $13.50 per sq.
Recoat, with Gravel, $3.00 per square.
Wage—Roofers, $8.00 per day.

Sheet Metal—
Windows—Metal, $2.00 a square foot.
Fire doors, (average), including hardware, $2.30 per sq. ft.

Skylights—
Copper,$1.25 a square foot (not glazed)
Galvanized iron, 35c a square foot (not glazed).
Wage—Sheet metal workers, $8.50 per day.

Stone—
Granite, average $7.50 sq. ft. in place.
Sandstone, average Blue, $4.75; Bosie, $2.80 sq. ft. in place.
Indiana Limestone, $3.00 per sq. ft. in place.
Wage—Stone cutters, $8.00 per day.
Stone setters, $8.50 per day.

Store Fronts—
Copper sash bars for store fronts, corner, center and around sides, will average 85c per lin. ft.
Note—Consult with agents.

Structural Steel—$112 per ton (erected).
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.
Cost of steel for average building (erected), $108 per ton.

Steel Sash—
All makes, from S. F. stock, 26c to 34c per sq. ft.
All makes, plant shipment, 28c to 34c per sq. ft.
(Includes mullions and hardware.)

Tile—White glazed, 80c per foot.
White floor, 80c per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $1.00 per sq. ft. laid.
Wage—Tilesetters, $8.50 per day.

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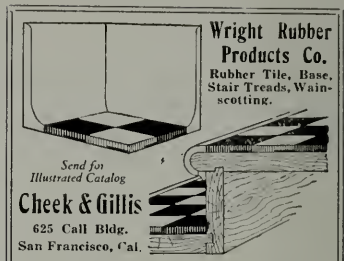

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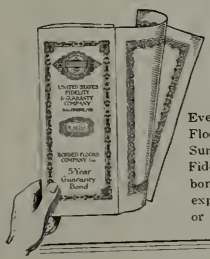

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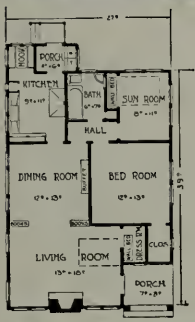

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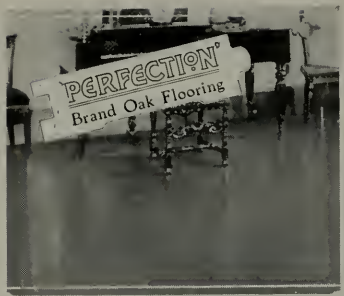

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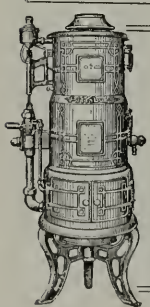

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SEE PAGE 1253, SWEET'S 18th CATALOG.

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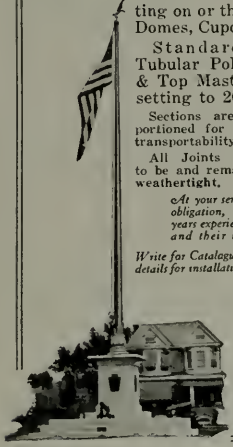

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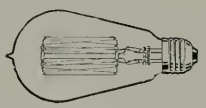

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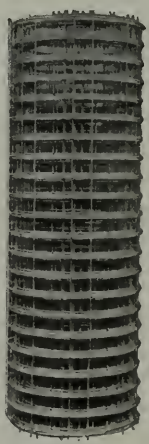

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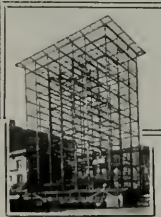

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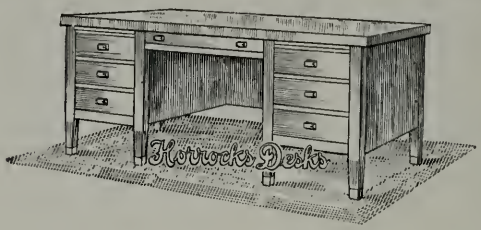

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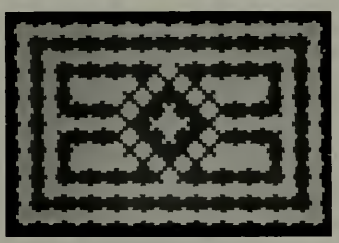

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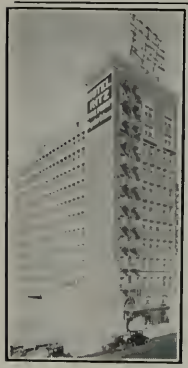

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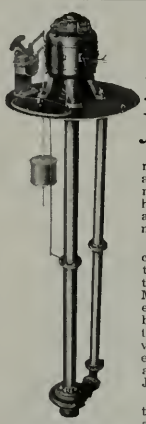

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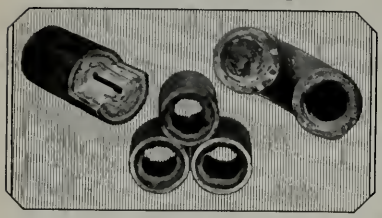

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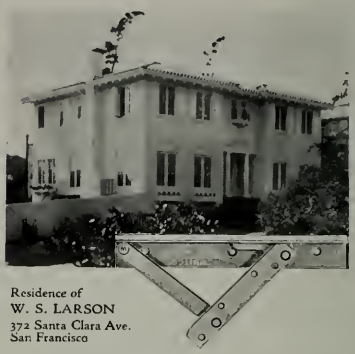

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City and County of San Francisco }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared W. J. L. Kierulff, who, having been duly sworn according to law, deposes and says that he is the business manager and publisher of THE ARCHITECT AND ENGINEER, Inc., and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

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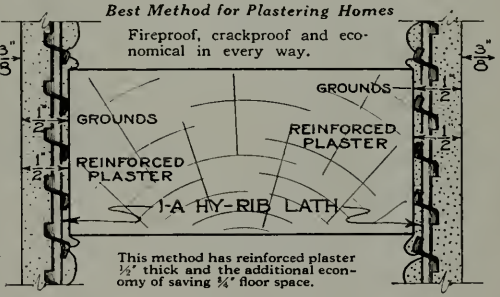
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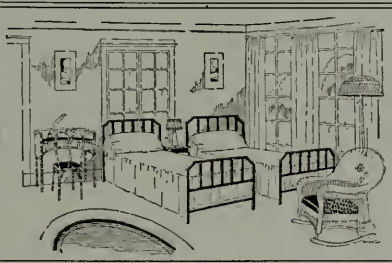

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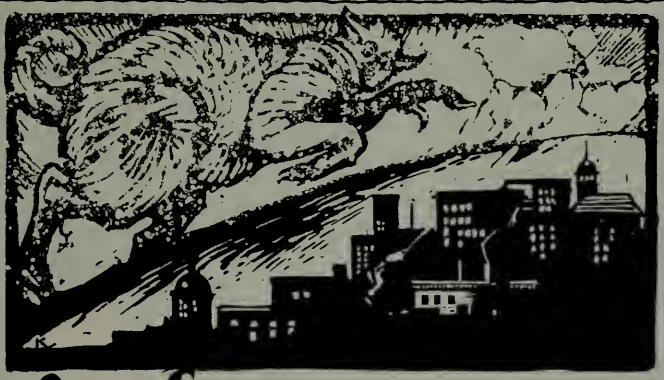

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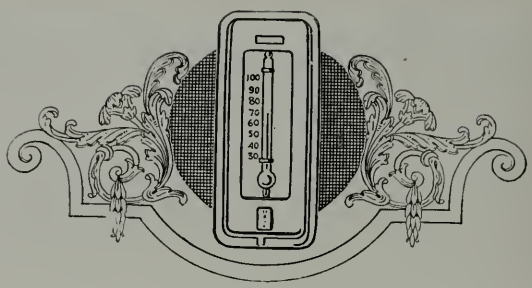

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Metprodco Reversible and Double Hung Steel Windows

UNITED STATES METAL PRODUCTS CO.

330 Tenth St., San Francisco, Calif.
Lumbec Exchange, Seattle, Wash.
Exchange Bldg., Portland, Ore.
Bank of Italy Bldg., Los Angeles, Calif.
Paulsen Bldg., Spokane, Wash.
Provident Bldg., Tacoma, Wash.

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ASBESTOS MATERIALS
Johns-Manville Inc., of California, 500 Post street, San Francisco.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.
Jones Bros. Asbestos Supply Co., Inc., 500 Second St., San Francisco.
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

ART METAL
Federal Ornamental Iron and Bronze Co., 16th St., and San Bruno Ave., San Francisco.
Michel & Pfeffer Iron Works, 1415 Harrison street, San Francisco.
California Artistic Metal & Wire Co., 349 Seventh street, San Francisco.

ARCHITECTURAL TERRA COTTA
N. Clark & Sons, 116 Natoma St., San Francisco.
Gladding, McBean & Company, Crocker Bldg., San Francisco.
Livermore Fire Brick Works, 604 Mission Street, San Francisco.
Tropico Potteries, Inc., Glendale, Cal.

BATHROOM ACCESSORIES
The Fairfacts Company, Inc., 234 W. 14th St., New York, represented by California Pottery Co., Mills Bldg., San Francisco and Wm. E. Graham, Kerckhoff Bldg., Los Angeles.

BEDS—WALL
California Wall Bed Co., 714 Market St., San Francisco.
Marahall & Stearns Co., Phelan Bldg., San Francisco.
Brown Disappearing Bed Company, 746 Phelan Building, San Francisco.

BLACKBOARDS
C. F. Weber & Co., 601 Mission St., San Francisco, Los Angeles and Reno, Nevada.
Stewart Sales Co., 247 Rialto Building, San Francisco.
"Permarock" Sold by Western States Seating Company, 39 Second Street, San Francisco.

BLINDS—VENETIAN AND DIFFUSELITE
Western Blind & Screen Company, factory, Los Angeles; San Francisco representatives, Edward C. Dehn, Hearst Bldg., and C. F. Webber Co.

BOILERS
Birchfield Boiler Company, Tacoma, Washington. See advertisement for Coast agencies.
Kewanee Boiler Company, Factory Branch, Postal Telegraph Bldg., San Francisco.
Kewanee Water Supply System, Simonds Machinery Co., 816 Folsom St., San Francisco.
Main Iron Works, 1000 Sixteenth Street, San Francisco.

BONDS FOR CONTRACTORS
Bonding Company of America, Kohl Bldg., San Francisco.
Globe Indemnity Co., 444 California St., San Francisco.
Fidelity & Casualty Co. of New York, Balfour Bldg., San Francisco.
Standard Accident Insurance Company, California Commercial Union Building, San Francisco.

BRASS GOODS, CASTINGS, ETC.
H. Mueller Manufacturing Co., 1072-76 Howard St., San Francisco.

BRICK—FACE, COMMON, ENAMEL, GLAZED
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
N. Clark & Sons, 116 Natoma St., San Francisco.
Richmond Pressed Brick Co., Sharon Bldg., San Francisco. Plant at Richmond, Cal.
Livermore Fire Brick Works and California Brick Co., 604 Mission St., San Francisco.
Cannon & Co., Sacramento; and 77 O'Farrell St., San Francisco.

BRICK & CEMENT COATING
Armorite and Concreta, manufactured by W. P. Fuller & Co., all principal Coast cities.
Minwax Co., Inc., 22 Battery St., San Francisco and 653 S. Clarence St., Los Angeles.
The Paraffine Companies, Inc., 475 Brannan St., San Francisco.
Wadsworth, Howland & Co., Inc., Jas. Hambly & Son, 1333 E. 7th St., Los Angeles, and 229 Clay St., San Francisco.

BRICK STAINS
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Armorite and Concreta, manufactured by W. P. Fuller & Co., all principal Coast cities.

BUILT-IN FIXTURES
Built-In Fixture Company, 2608 San Pablo Ave., near Dwight Way, Berkeley, and Hoosier Store, Pacific Building, San Francisco.

BUILDERS' HARDWARE
Schlage Button-Lock, The Schlage Company, Mfrs. American Bank Bldg., San Francisco. Sold by leading hardware dealers.
Joost Bros., agents for Russell & Erwin Hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn., Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
Palace Hardware Company, Agents Corbin goods, 581 Market St., San Francisco.
Richards-Wilcox Mfg. Co., Aurora; Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

RALSTON IRON WORKS, INC.
ESTABLISHED 1876
Office and Works
20th and Indiana Streets
SAN FRANCISCO
Phone Mission 5230
Structural Steel
Representing
Pauly Jail Building Co.

A. Quandt & Sons

OUR WORK IS THE BEST GUARANTEE OF THE QUALITY OF OUR SERVICE

Painters - Decorators

374 GUERRERO ST. **San Francisco** SINCE 1885 3319 CENTRAL AVE. **Los Angeles**

ARCHITECTS' SPECIFICATION INDEX—Continued

BUILDING MATERIALS, SUPPLIES, ETC.
Pacific Materials Co., Underwood Bldg., San Francisco.
Waterhouse-Wilcox Co., 523 Market St., San Francisco.

BURGLAR ALARMS
Smith Electric Company, 50 Natoma St., San Francisco.

CEMENT
Old Mission Portland Cement Co., Standard Oil Building, San Francisco.
Medusa Stainless White Cement, plain and waterproofed, carried in stock and sold by leading building supply dealers in California, Oregon and Washington.
Pacific Portland Cement Co., Pacific Building, San Francisco; Portland, San Jose and Los Angeles.
Monolith Portland Cement Company, 703 Market St., San Francisco and Los Angeles.

CEMENT—WATERPROOF
Monolith Portland Cement Co., 215 W. 7th St., Los Angeles, and 800 Claus Spreckels Building, San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
Minwax Co., Inc., 22 Batery St., San Francisco and 653 S. Clarence St., Los Angeles.
The General Fireproofing Company, 20 Beale Street, San Francisco
Bay State Brick and Cement Coating, sold by James Hambly, 229-233 Clay St., San Francisco.

CEMENT GUN CONSTRUCTION
Cement Gun Construction Co., Hobart Building, San Francisco.

CEMENT STUCCO
"California" sold by California Stucco Products Company, 340 Dore St., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CLAY PRODUCTS
N. Clark & Sons, 116 Natoma St., San Francisco.
California Brick Co. and Livermore Fire Brick Works, 604 Mission St., San Francisco.
Cannon & Co., Sacramento, Cal.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
Tropico Potteries, Inc., Glendale, Cal.
United Materials Co., Sharon Bldg., San Francisco.

CLOCKS—ELECTRIC TIME
Standard Electric Time Co., 461 Market St., San Francisco.
Pacific Electric Clock Company, 86 Third St., San Francisco.

CONCRETE CONSTRUCTION
Vannucci Bros., 16th and Church Streets, San Francisco.
Villadsen Bros., Inc., 417 Market Street, San Francisco.

CONCRETE OR CEMENT HARDENER
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco

CONCRETE MIXERS
Foote and Jaeger mixers sold by Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.

CONCRETE REINFORCEMENT
Edw. L. Soule Co., Rialto Bldg., San Francisco.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Clinton Welded Wire Fabric, Wickwire Spencer Steel Corporation, 144 Townsend St., San Francisco.
Judson Mfg. Co., 817-821 Folsom St., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Triangle Mesh Fabric. Sales agents, Pacific Materials Co., 525 Market St., San Francisco.
Truscon Steel Co., 709 Mission St., San Francisco.
Badt-Falk Co., Call-Post Bldg., San Francisco.

CONDUITS
"Sherarduct," Garnett Young & Company, 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
Hansen, Robertson & Zumwalt, 4145 Broadway, Oakland.
Barrett & Hilp, 918 Harrison St., San Francisco.
Herbert Beckwith, Everson Bldg., Oakland.
Larsen-Siegrist Co., Inc., 807 Claus Spreckels Bldg., San Francisco.
Lindgren-Swinerton, Inc., Standard Oil Building, San Francisco
R. W. Littlefield, 357 12th St., Oakland.
Murch-Williams Construction Co., Fox-Oakland Building, Oakland, Calif.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Dinwiddie Construction Co., Crocker Bldg., San Francisco.
John M. Bartlett, 357 Twelfth St., Oakland.
Clinton Construction Company, 923 Folsom St., San Francisco.
Monson Bros., 251 Kearny St., San Francisco.
Geo. Wagner, Park Ave., San Francisco.
McLeran & Co., R., Hearst Bldg., San Francisco.

SATINETTE WHITE ENAMEL

FLATTINE CABINET FINISH
ELASTICA INTERIOR AND ELASTICA EXTERIOR

Standard Varnish Works

55 STEVENSON STREET SAN FRANCISCO

Smith Electric Company

"Quality First"

ELECTRICAL CONSTRUCTION

CONTRACTING . WIRING . FIXTURES MOTORS . SUPPLIES . REPAIRING

50 Natoma Street Telephone Sutter 1378

ARCHITECTS' SPECIFICATION INDEX—Continued

Vukicevich & Bagge, 815 Bryant St., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.
I. M. Sommer, 401 Balboa Bldg., San Francisco.
Jas. L. McLaughlin, 251 Kearny St., San Francisco.
Alfred H. Vogt, 185 Stevenson St., San Francisco.
Carl T. Peterson, 185 Stevenson St., San Francisco.

CONTRACTORS' EQUIPMENT
Edward R. Bacon Co., Folsom at 17th St., San Francisco, and Los Angeles.
Lansing Company, 338 Brannan Street, San Francisco.

CONVENIENCE OUTLETS
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St.

CORK TILE
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.
David E. Kennedy, Sharon building, San Francisco, and Story building, Los Angeles.
Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles, St., Los Angeles.

CRUSHED ROCK
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.

DAMP-PROOFING AND WATERPROOFING
"Imperial," manufactured by Brooks & Doerr, Merchants National Bank Building, San Francisco.
Minwax Co., Inc., 22 Battery St., San Francisco, and 653 S. Clarence St., Los Angeles.
Samuel Cabot Co., Boston; represented in San Francisco by Pacific Materials Co., Underwood Bldg., San Francisco.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco

DOOR LOCKS
Schlage Button-Lock, The Schlage Company, Mfrs. American Bank Bldg., San Francisco. Sold by leading hardware dealers.

DOOR HANGERS
Pitcher Hanger, sold by National Mill & Lumber Co., 326 Market St., San Francisco.
Richard-Wilcox Mfg. Co., the Ewing-Lewis Co., 626 Underwood Building, San Francisco.

DRAIN PIPE AND FITTINGS
"Corrosiron" Acid Proof, manufactured by Pacific Foundry Co., Harrison and 18th Sts., San Francisco.

DRINKING FOUNTAINS
Haws Sanitary Drinking Faucet Co., 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 166-7th St., San Francisco.
San Francisco Elevator Company, Inc., 860 Folsom St., San Francisco.
Elevator Supplies Co., Inc., Hoboken, N. J.; San Francisco office, 186 Fifth St.
"Chelsea" dumb waiters, sold by M. E. Hammond, Pacific building, San Francisco.

ELECTRICAL CONTRACTORS
Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 956 Folsom St., San Francisco.
Central Electric Company, 177-79 Minna St., San Francisco
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Brown-Langlais Electrical Construction Co., 315 Fifth Street, San Francisco.
Newberry Electric Company, Alta Bldg., San Francisco
Smith Electric Company, 50 Natoma St., San Francisco.
Spencer Electric Co., 320 12th Street, Oakland, Calif.
Decker Electrical Construction Company, 149 New Montgomery St., San Francisco.
Electric Construction Company, 616 Broadway, Fresno.
Ne Page, McKenny Co., 589 Howard St., San Francisco, Oakland, Los Angeles and Seattle.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Pacific Bldg., San Francisco.

ELECTRICAL PLUGS, RECEPTICALS, ETC.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
General Electric Company, Schenectady, New York.
"H. & H. Switches," Garnett Young & Co., 612 Howard St., San Francisco.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St.
Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.
Trumbull Electric Mfg. Co., Plainville, Conn., and 595 Mission Street, San Francisco.

ELECTRIC SAFETY INTERLOCKS
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.

ELECTRIC HEATING
"Glolog" manufactured by Strait & Richards, Inc., Newark, N. J., represented by Atlantic Pacific Agencies Corporation, 204 Rialto Building, San Francisco.
Wesix Electric Heaters, manufactured by W. Wesley Hicks, Rialto Building, San Francisco.

Los Angeles, 871-164 S. F. Phone, Garfield 204

Independent Automatic Sprinkler Company

Fire Protection Engineers

208 So. San Pedro Street, Los Angeles 72 Natoma Street, San Francisco

TOLEDO AUTOMATIC SPRINGLESS SCALES
12 OUNCES TO 20 TONS
for Factories, Warehouses, Wholesale Houses—in fact any kind of business where accurate weight is desired
676 MISSION ST. Phone Sutter 250 TOLEDO SCALE CO. SAN FRANCISCO California

ARCHITECTS' SPECIFICATION INDEX—Continued

ELEVATORS—PASSENGER and FREIGHT
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 166-7th St., San Francisco.
San Francisco Elevator Co., 860 Folsom St., San Francisco.
Van Emon Elevator Company, 1159 Howard St., San Francisco.

ELEVATOR MOTORS AND CONTROL
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and First National Bank Bldg., San Francisco, Calif.

ELEVATOR SIGNALS, DOOR EQUIPMENT
Elevator Supplies Co., Inc., Hoboken, N. J.; San Francisco office, 186 Fifth St.
Randall Control & Hydrometric Corporation, 265A Minna St., San Francisco, and 523 Central Bldg., Los Angeles.
Richards-Wilcox Mfg. Co., 525 Market St., San Francisco.

ENGINEERS — CONSULTING, ELECTRICAL, MECHANICAL
Hunter & Hudson, Rialto Bldg., San Francisco.
Charles T. Phillips Company, Bank of Italy Bldg., San Francisco, and Roberts Bldg., Los Angeles.

FAIENCE TILE
Tropico Potteries, Inc., Glendale, Cal.

FENCES—WIRE AND IRON
Standard Fence Company, 432 Bryant, San Francisco and 60th and Lowell Sts., Oakland.
Michel & Pfeffer Iron Works, Harrison and Tenth Streets, San Francisco.

FIRE EXIT LATCHES
Vonnegut Hardware Co., Indianapolis, Ind., represented in San Francisco by C. H. Jensen Co., Call Building.

FIRE ESCAPES
Michel & Pfeffer Iron Works, 1415 Harrison St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.

FIRE HOSE RACKS
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

FIREPLACE—ELECTRIC
"Glogiog," manufactured by Strait & Richards, Inc., represented by Atlantic Pacific Agencies Corp., Rialto Building, San Francisco.

FIRE PROOF DOORS
U. S. Metal Products Co., 330-10th St., San Francisco.
Kinnear Mfg. Co., represented in San Francisco by Pacific Materials Co., Underwood Bldg.

FIRE SPRINKLERS—AUTOMATIC
Fire Protection Corp. of California, 315 Montgomery St., San Francisco.
Fire Protection Engineering Co., 142 Sansome St., San Francisco.
Grinnell Company of the Pacific, 453 Mission St., San Francisco.
Independent Automatic Sprinkler Co., 72 Natoma St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 552 Brannan St., San Francisco.
The Fink & Schindler Company, 218-13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.

FLAG POLES—STEEL
Pole & Tube Works, Newark, N. J., represented by H. M. Holway, Hobart Bldg., San Francisco, and 600 Metropolitan Bldg., Los Angeles.

FLOORS, BLOCK
Carter, Bloxonend Flooring Co., Kansas, Mo., represented on Pacific Coast by H. M. Holway, Hobart Building, San Francisco.

FLOOR CLIPS
Bull Dog Floor Clip Sales Co., 77 O'Farrell St., San Francisco, and 600 Metropolitan Bldg., Los Angeles.
Grip-Tite floor anchors, Cheek & Gillis, 625 Call Building, San Francisco.

FLOORING, HEAVY DUTY
Carter, Bloxonend Flooring Co., Kansas, Mo., represented on Pacific Coast by H. M. Holway, Hobart Building, San Francisco.

FLOORS—HARDWOOD
Cadwallader, Gibson Co., 5th & Brannan St., San Francisco.
Strable Hardwood Company, 511 First St., Oakland.
E. L. Bruce Co., Manufacturers, Memphis, Tenn.
J. E. Higgins Lumber Company, 423 Sixth St., San Francisco.
"Perfection" Brand Oak Flooring, Arkansas Oak Flooring Co., Pine Bluff, Arkansas.

FLOOR TREATMENT—HARDWOOD, COMPOSITION AND CONCRETE
Minwax Co., Inc., 22 Battery St., San Francisco and 653 S. Clarence St., Los Angeles.

FLUSH VALVES
Handy Self-Cleaning Flush Valve Co., 731 Folsom St., San Francisco.
Shroeder Flush Valve Company, 1300 N. Main Street, Los Angeles and 16 Stewart Street, San Francisco.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.
C. B. Babcock Company, 768 Mission St., San Francisco.

FURNITURE—OFFICE, SCHOOL, CHURCH,
Home Manufacturing Company, 543 Brannan St., San Francisco.

THE PELTON WATER WHEEL CO.
Hydraulic Engineers
Light-Duty High-Head Pumps for Tank and Other Building Service
Heavy-Duty Pumps for Municipal and General Water Supply
2197 19th Street San Francisco

NASON'S OPAQUE FLAT FINISH A VALUABLE OIL PAINT FOR WALLS, CEILINGS, ETC.
Made in California to stand Pacific Coast climatic conditions
R. N. Nason & Co., Paint Makers
PORTLAND 151 Potrero Ave.—SAN FRANCISCO—436 Market St. SEATTLE

ARCHITECTS' SPECIFICATION INDEX—Continued

C. F. Weber & Co., Second and Mission Sts., San Francisco.
W. & J. Sluane, 216 Sutter St., San Francisco.
Western States Seating Co., 39 Second St., San Francisco.
H. Rumph, 567 Howard St., San Francisco.
Fink & Schindler Company, 218-19th St., San Francisco.

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 862 Mission St., San Francisco.
Cobbledick-Kibbe Glass Co., 666 Howard St., San Francisco.
Fuller & Goepp, 32 Page St., San Francisco, and Jackson, at Eleventh St., Oakland.
W. P. Fuller & Company, all principal Coast cities.

GRANITE
Raymond Granite Co., Potrero Ave., and Division St., San Francisco.

GRAVEL AND SAND
Coast Rock & Gravel Co., Call-Post Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

GYMNASIUM EQUIPMENT—LOCKERS, ETC.
Ellery Arms Co., 583 Market St., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin Hardware, 1053 Market St., San Francisco.
The Stanley Works, New Britain, Conn.; Coast sales offices, San Francisco, Los Angeles, and Seattle, Wash.
Vonnegut hardware, sold by C. H. Jensen Co., Call Bldg., San Francisco.
Richards-Wilcox Mfg. Co., Aurora, Ill.; Ewing-Lewis Co., 626 Underwood Building, San Francisco.

HEATING AND VENTILATING CONTRACTORS
Atlas Heating and Ventilating Company, Inc., Fourth and Freelon Sts., San Francisco.
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Mangrum & Otter, 827-831 Mission St., San Francisco.
Lawson & Drucker, 450 Hayes St., San Francisco.
Lupen and Hawley, 906 7th St., Sacramento.
William F. Wilson Co., 328 Mason St., San Francisco.
W. H. Picard, 5656 College Ave., Oakland.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
H. G. Newman Co., 2004 Telegraph Ave., Oakland.

HEATING & VENTILATING EQUIPMENT
W. S. Haines & Co.'s steam specialties. O. M. Simmons Company, 115 Mission St., San Francisco.
C. A. Dunham, Chicago, Illinois; 585 Mission Street, San Francisco, and 119 E. 3rd Street, Los Angeles.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.
Illinois Engineering Co., 417 Market St., San Francisco.
Williams Radiator Company, 571 Mission St., San Francisco.
Warren Webster & Company, Sharon Building, San Francisco.

HEATERS, GAS GRATES, RADIATORS, ETC.
General Gas Light Company, 768 Mission St., San Francisco.
Ra-Do Fumeless Gas Radiators, Potter Radiator Corporation, 478 Sutter St., San Francisco
Humphrey Radiantfire, sold by Rudd Heater Company, 431 Sutter St., San Francisco.
Pacific Gas Steam Radiator Company, "Gas Steam Radiators," 571 Mission Street, San Francisco.

HOLLOW BUILDING TILE (Burned Clay)
California Brick Company, 604 Mission St., San Francisco.
Cannon & Co., plant at Sacramento; 77 O'Farrell St., San Francisco.
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

HOSE—UNDERWRITERS UNLINED LINEN—RUBBER
Plant Rubber & Asbestos Works, 537-539 Brannan Street, San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.

HOSPITAL SIGNAL SYSTEMS
Chicago Signal Co., represented by Garnett Young & Co., 612 Howard St., San Francisco.

HOTELS
St. Francis Hotel, Powell and Post Streets, San Francisco.

ICE MAKING MACHINERY
"Frigedaire," Sold by W. L. Cochran, 880 Mission St., San Francisco.

INCINERATORS
The Incinerite, sold by M. E. Hammond, Mezzanine, Pacific Building, San Francisco.

INDUSTRIAL LIGHTING EQUIPMENT
Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., and First National Bank Building, San Francisco.

INGOT IRON
"Armco" brand, manufartured by Ameriran Rolling Mill Company, Middletown, Ohio, and 10th and Bryant Sts., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

The Perfect Automatic Valve
W. S. Haines & Co., Steam Specialties, Vacuum and Vapor Systems of Heating
"Twenty-four years of satisfactory service."
(See Page 1603 of Sweet's Catalogue)
O. M. SIMMONS CO. 115 Mission St., San Francisco Phone: Douglas 5497

INDUSTRIAL PLANTS BUILDING CONSTRUCTION
VILLADSEN BROTHERS
INCORPORATED
ENGINEERS & CONTRACTORS
417 MARKET STREET SAN FRANCISCO

ARCHITECTS' SPECIFICATION INDEX—Continued

INSULATION
Western Asbestos Magnesia Co., 25 South Park, San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE ARCHITECT
Emerson Knight, 704 Market St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 514-516 Phelan Bldg., San Francisco.

LATHING MATERIAL—WIRE, METAL, ETC.
Pacific Materials Co., 525 Market St., San Francisco.
The General Fireproofing Company, 20 Beale Street, San Francisco
Truscon Steel Co., 709 Mission Street, San Francisco.
Wickwire Spencer Steel Corporation, 144 Townsend St., San Francisco.
Youngstown Pressed Steel Co., Warren, Ohio.

LIGHTING FIXTURES
Benjamin Electric Mfg. Co., New York, Chicago, 580 Howard St., San Francisco.
Harvey Hubbell, Inc., Bridgeport, Conn., represented in San Francisco by Garnett Young & Co., 612 Howard St., San Francisco.
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.

LIMESTONE, INDIANA
Indiana Limestone Quarrymen's Association, Box 770, Bedford, Indiana.

LINOLEUM
D. N. & E. Walter & Co., 562 Mission St., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.
W. & J. Sloane, 216 Sutter St., San Francisco.
Bonded Floors Company, 370 Second St., San Francisco; 263 So. Los Angeles St., Los Angeles.

LINOTILE
Van Fleet-Freear Company, 557 Howard St., San Francisco, and 420 S. Spring St., Los Angeles.

LOCKS
Schlage Button-Lock, The Schlage Company, Mfrs. American Bank Bldg., San Francisco. Sold by leading hardware dealers.

LOGS—ELECTRIC
"Gloglog," manufactured by Strait & Richards, Inc., represented by Atlantic Pacific Agencies Corp., Rialto Building, San Francisco.

LUMBER
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Pacific Manufacturing Company, San Francisco, Oakland, Los Angeles and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Santa Fe Lumber Co., 16 California St., San Francisco.
J. E. Higgins Lumber Company, 423 Sixth St., San Francisco.
Sunset Lumber Company, First and Oak Sts., Oakland.

LUMBER—HARDWOOD
Davis Hardwood Co., Bay and Mission Streets, San Francisco.

MANTELS—WOOD, TILE, ETC.
Mangrum & Otter, 827-831 Mission St., San Francisco.

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Ray Cook Marble Company, foot of Powell St., Oakland.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.
Tompkins-Kiel Marble Company, 505 Fifth Ave., New York; also Chicago, Philadelphia and San Francisco.
Columbia Marble Co., 413 Rialto Bldg., San Francisco.

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Pacific Rolled Metal Company, 715 Harrison St., San Francisco.
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 330 Tenth St., San Francisco.
Michel & Pfeffer, Harrison and Tenth Streets, San Francisco.

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Cobbledick-Kibbe Glass Company, 666-8 Howard street, San Francisco, and Washington at Third St., Oakland.

METAL TRIM
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Youngstown Pressed Steel Co., Warren, Ohio.

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National Mill and Lumber Co., San Francisco and Oakland.
Lannom Bros. Mfg. Co., 5th and Magnolia Sts., Oakland.

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S. T. Johnson Co., 1337 Mission St., San Francisco.
G. E. Witt Co., 862 Howard St., San Francisco.
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ARCHITECTS' SPECIFICATION INDEX—Continued

OIL STORAGE AND DISTRIBUTING STATIONS
S. F. Bowser & Co., Inc., 425 Brannan St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Oil Tank & Pump Co., 430 Fourth St., San Francisco; 830 S. Los Angeles St., Los Angeles.

ORNAMENTAL IRON AND BRONZE
California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
Federal Ornamental Iron and Bronze Co., 16th St., and San Bruno Ave., San Francisco.
Michel & Pfeffer Iron Works, 1415 Harrison St., San Francisco.
Palm Iron & Bridge Works, Sacramento.
C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.

PANEL BOARDS
Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., and First National Bank Building, San Francisco.

PANIC DOORS
Vonnegut hardware, sold by C. H. Jensen Co., Call Bldg., San Francisco.

PAINTING, DECORATING, ETC.
I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
A. Quandt & Son, 374 Guerrero St., San Francisco.

PAINTS, OILS, ETC.
Magner Bros., 414-424 Ninth St., San Francisco.
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R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
The Paraffine Companies, Inc., San Francisco, Los Angeles, Portland and Seattle.
Oakley Paint Manufacturing Company, 727 Antonia St., Los Angeles, and Hearst Building, San Francisco.

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"Empire," Manufactured by Pacific Portland Cement Co., Pacific Building, San Francisco, Portland, San Jose and Los Angeles.
Standard Gypsum Co., 305 Sharon Bldg., San Francisco and Los Angeles, Portland and Seattle.

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MacGruer & Simpson, 266 Tehama St., San Francisco.

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National Steel Fabric Co., Pittsburgh and 561 Market St., San Francisco.

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Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Hateley & Hateley, Mitau Bldg., Sacramento.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.
Luppen & Hawley, 906 7th St., Sacramento.
W. H. Picard, 5656 College Ave., Oakland.
H. G. Newman Company, 2004 Telegraph Ave., Oakland.

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Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
H. Mueller Manufacturing Company, 1072-76 Howard St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
West Coast Porcelain Manufacturers, 334-335 Wells Fargo Building, 85 Second St., San Francisco.

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Fairbanks, Morse & Company, Harrison and Spear Streets, San Francisco, California.
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Simonds Machinery Co., 816 Folsom Street, San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Pelton Water Wheel Co., 2022 Harrison St., San Francisco.
S. F. Bowser & Co., Inc., 425 Brannan St., San Francisco.
S. T. Johnson Co., 1337 Mission St., San Francisco.
Wayne Tank & Pump Co., 430 Fourth St., San Francisco; 830 S. Los Angeles St., Los Angeles.
Byron Jackson Iron Works, 55 New Montgomery St., San Francisco.

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Badt-Falk & Co., Call Bldg., San Francisco.
Judson Iron Works, San Francisco and Oakland.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Pacific Coast Steel Co., Rialto Bldg., San Francisco.
Truscon Steel Co., 709 Mission St., San Francisco.
United Alloy Steel Corporation, Canton, Ohio; Western Sales Office, Santa Fe Building, San Francisco.

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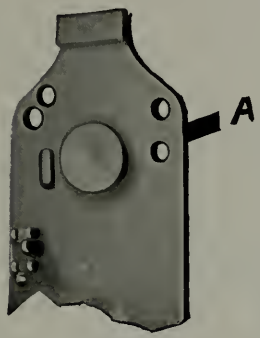

See Page 28
In the New Catalog

For Correct Application

A frequent source of trouble in the older types of panic bolts was the incorrect application of the devices, interfering with the quick and complete withdrawal of the latch bolt.

In the new model **Von Duprin** latches, this trouble is entirely eliminated by the template on the back of the mechanism case cap ("A" in the illustration).

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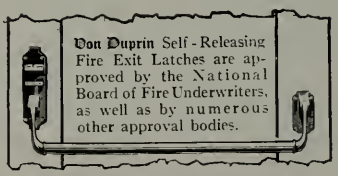

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"Frigedaire," Sold by W. L. Cochran, 880 Mission St., San Francisco.
McCray Refrigerator Co., Kendallville, Ind.; 765 Mission St., San Francisco.

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Jones Brothers Asbestos Supply Co., 500 Second St., San Francisco.
Johns-Manville Inc., of California, 500 Post St., San Francisco.
Western Asbestos Magnesia Company, 25 South Park, San Francisco.

RUBBER TILING—INTERLOCKING
New York Belting & Packing Co., 518-19 Mission St., San Francisco.

RUBBER TILING
Wright Rubber Products Co., represented by Cheek & Gillis, 625 Call Bldg., San Francisco.
United States Rubber Co., 300 Second Street, San Francisco and 923 S. Los Angeles Street, Los Angeles, Calif.
Bonded Floors Co., Inc., 370 2nd Street, San Francisco and 263 South Los Angeles Street, Los Angeles.

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W. & J. Sloane, 216 Sutter St., San Francisco.

SAFETY TREADS
Pacific Materials Co., 525 Market St., San Francisco.

SAFETY SWITCHES
Trumbull Electric Mfg. Co., Plainville, Conn. and 595 Mission Street, San Francisco.

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American Chain Co., Bridgeport, Conn. and Pacific Building, San Francisco.
Smith & Egge Mfg. Co., Bridgeport, Conn. Coast agents, Rawlins & Smith, San Francisco and Los Angeles.

SAFES AND VAULTS
Hermann Safe Company, 216 Fremont St., San Francisco.

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Toledo Scale Company, 676 Mission St., San Francisco.
Fairbanks, Morse & Company, Harrison and Spear Streets, San Francisco, California.

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Cabot's Creosote Stains, sold by Pacific Bldg. Materials Co., 525 Market St., San Francisco.

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Garnett, Young & Co., 612 Howard St., San Francisco.

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H. H. Robertson Co., represented on the Pacific Coast by H. L. Holway, Hobart Building, San Francisco.

STEEL FLAG POLES
Pole and Tube Works, Newark, N. J., represented on Pacific Coast by H. M. Holway, Hobart Building, San Francisco.

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Ocean Shore Iron Works, 55 Eighth St., San Francisco.
Main Iron Works, 1000 Sixteenth St., San Francisco

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Michel & Pfeffer Iron Works, 1415 Harrison street, San Francisco.
Judson Mfg. Co., 817-821 Folsom St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Coast Steel Co., Rialto Building, San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
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Ralston Iron Works, 20th and Indiana streets. San Francisco.
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- Kinnear Rolling Steel Doors, sold by Pacific Building Materials Co., Underwood Bldg., San Francisco.

STEEL SASH
- Bayley-Springfield solid steel sash, sold by Pacific Materials Co., 525 Market St., San Francisco.
- "Fenestra" Solid Steel Sash, manufactured by Detroit Steel Products Co., factory sales office, 251 Kearny St., San Francisco.
- Michel & Pfeffer Iron Works, 1415 Harrison street, San Francisco.
- Truscon Steel Company, 709 Mission St., San Francisco.

STONE
- Indiana Limestone Quarrymen's Association, Box 770, Bedford, Indiana.
- Raymond Granite Company, Potrero Ave. and Division Street, San Francisco.

STREET LIGHTING EQUIPMENT
- Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., and First National Bank Building, San Francisco.

STUCCO, COMPOSITION
- California Stucco Co., 340 Dore St., San Francisco.

STUCCO-PLASTER REINFORCEMENT
- National Steel Fabric Company, Monadnock Building, San Francisco.

STUDDING—FIREPROOF STEEL
- The General Fireproofing Company, 20 Beale Street, San Francisco

SWITCHES AND SWITCHBOARDS
- Drendell Electrical & Mfg. Co., 1345 Howard St., San Francisco
- Westinghouse Electric and Mfg. Co., East Pittsburgh, Pa., and First National Bank Building, San Francisco.
- Trumbull Electric Mfg. Co., Plainville, Conn. and 595 Mission Street, San Francisco.

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- C. F. Weber & Co., 601 Mission St., San Francisco.
- Western States Seating Co., 133 Kearny St., San Francisco.

THERMOSTATS FOR HEAT REGULATION
- Thermostats for Heat Regulation, Johnson Service, Milwaukee, Wisconsin; Rialto Bldg., San Francisco.

TOILET—SEATS
- Whale-Bone-Ite, Manufactured by The Brunswick-Balke-Collender Company, 623 S. Wabash Ave., Chicago, Ill.; Monadnock Building, San Francisco, and Security Building, Los Angeles.

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- Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
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- West Coast Porcelain Manufacturers, Wells Fargo Building, San Francisco.

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WALL BEDS—SEATS, ETC. (See Beds)

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- Ruud Automatic Water Heater, sold by Ruud Heater Company, 431 Sutter St., San Francisco.

WATER SUPPLY SYSTEMS
- Kewanee Water Supply System—Simonds Machinery Co., agents, 816 Folsom Street, San Francisco.

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- Crittall Casement Window Company, Detroit, Michigan.
- The Casement Hardware Company, 241 Pelouze Building, Chicago, Ill.
- Vincent Whitney Company, 356 Market Street, San Francisco.
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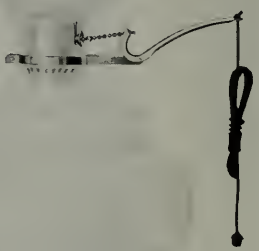

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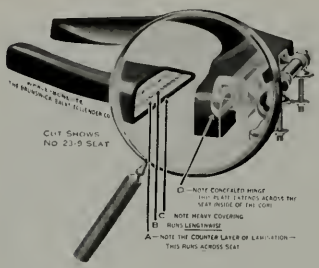
CUT SHOWS NO 23-S SEAT
D—NOTE CONCEALED HINGE
THIS PLATE EXTENDS ACROSS THE SEAT INSIDE OF THE CORE
C NOTE HEAVY COVERING
B RUNS LENGTHWISE
A—NOTE THE COUNTER LAYER OF LAMINATION—
THIS RUNS ACROSS SEAT

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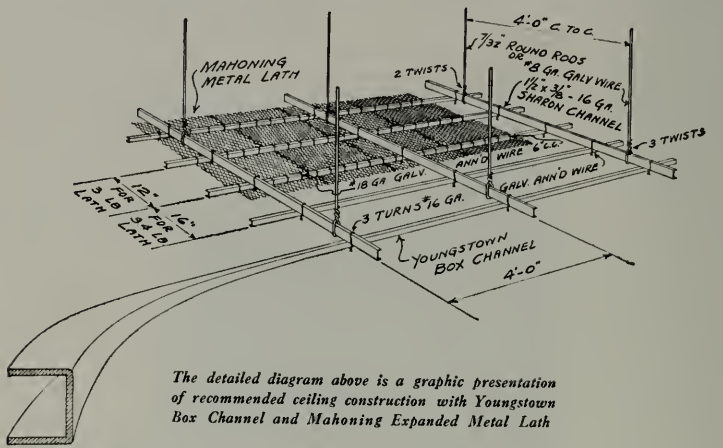

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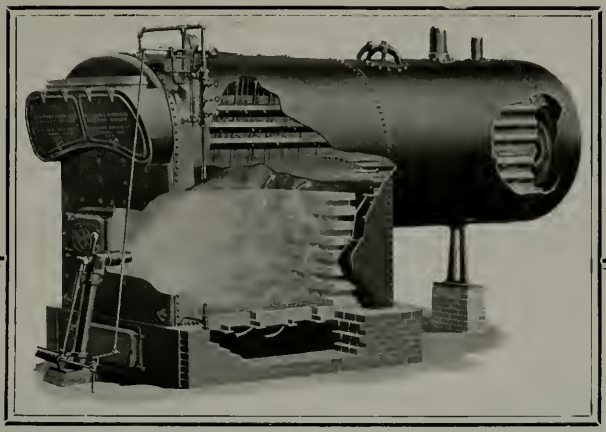

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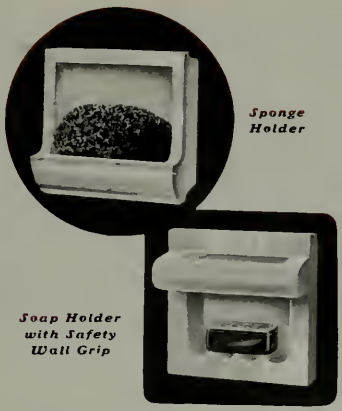

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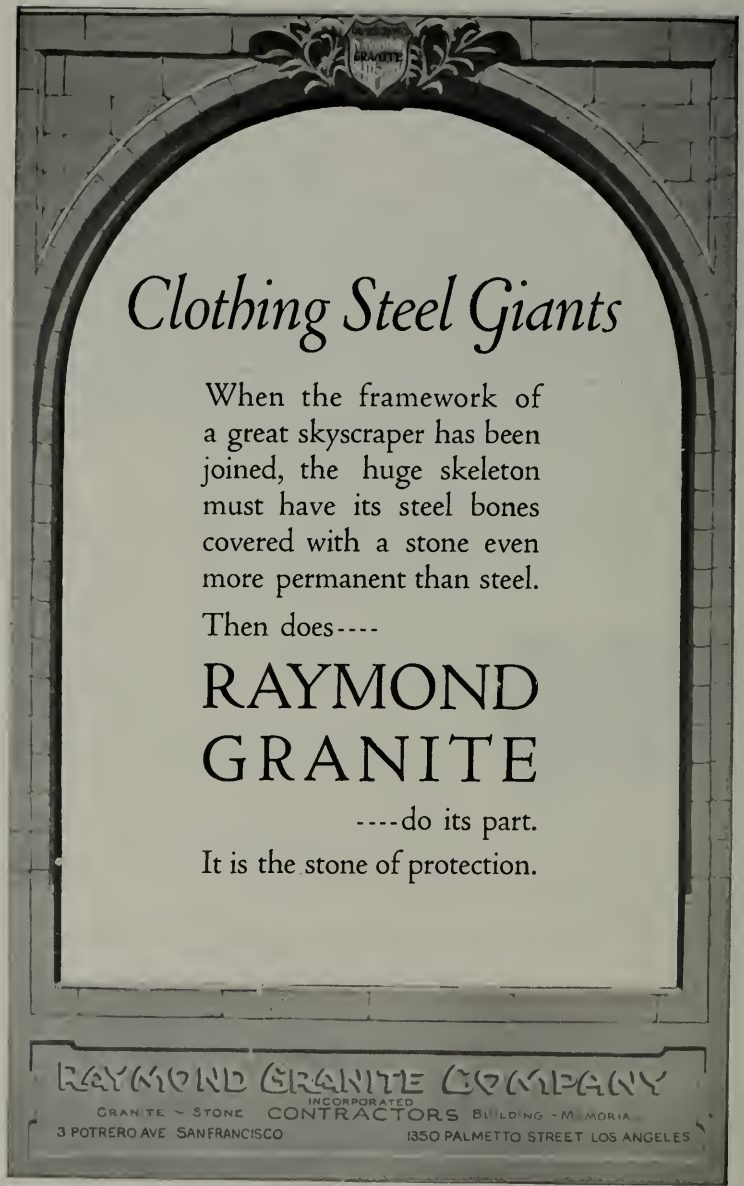
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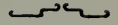

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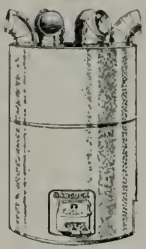

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DETAIL OF OJAI VALLEY COUNTRY CLUB
WALLACE NEFF, PASADENA, ARCHITECT

Awarded Certificate of Honor by Southern California Chapter, A. I. A.

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The Ojai Valley Country Club House

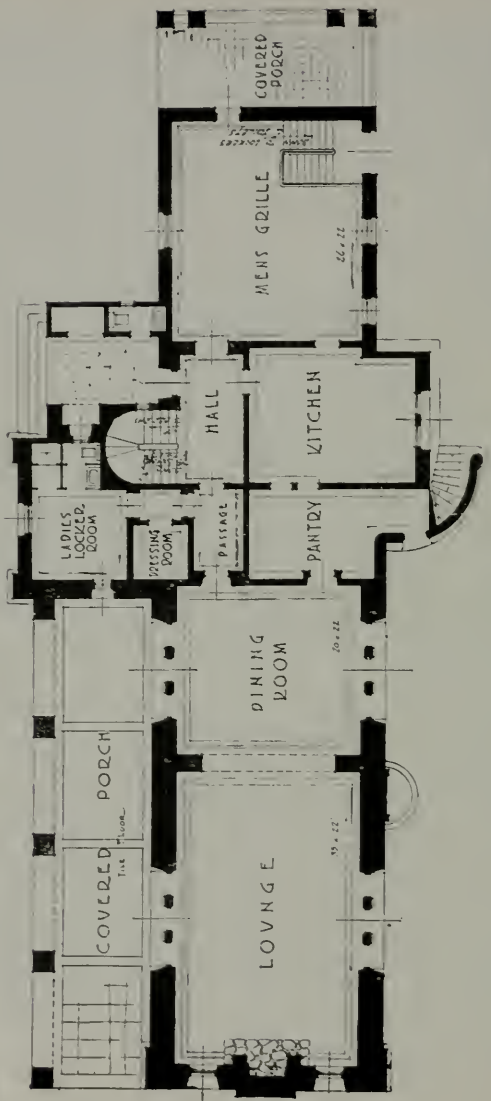
THE Ojai Valley Country Club, situated in the picturesque Ojai Valley, near Ventura, was recently adjudged the most adaptable and artistic club house built in Southern California in 1923. The Southern California Chapter of the American Institute of Architects has awarded a Certificate of Honor to Architect Wallace Neff of Pasadena for his distinguished work in designing this building.

The Ojai club house, an unusually pure example of early California Spanish architecture, is situated on a knoll commanding a sweeping view of the beautiful little Ojai Valley, a spot famed for its beauty through the state. The building is low and rambling, after the manner of the old Spanish haciendas, and is sheltered by stately live oaks. Flagstone terraces, white-washed walls and red tiled roof accomplish a combination of color and texture in faithful keeping with the setting and design. The architect is said to have succeeded to a most unusual degree in adapting his scheme to the environment.

Among the many artistic details of the exterior, seen in the view herewith, are the shuttered door in the boulder-like stairway side, the wrought-iron window grating and odd lamp beside it, of the same metal, and the gracefully curving lines of the facade.

In the accompanying floor plan it will be seen that careful consideration has been given convenience and the special requirements of a country clubhouse in laying out the interior arrangement. The dining room and the men's grille are well placed with regard to both privacy and availability to kitchen. The main lounge has a large fire-place with sloping chimney-breast running to the open roof, and a covered porch adjoining. The rugged walls of the rooms are finished a neutral shade. Heavy, rough-hewn ceiling beams, iron-bound are given the appearance of extreme age. Warm Spanish colors in the rugs and hangings tastefully placed, relieve the dullness of walls and ceilings.

Mr. Neff was given additional and unusual distinction when he was awarded a second Certificate of Honor for his design of the residence of Mrs. M. L. H. Walker in Pasadena.



PLAN OJAI VALLEY COUNTRY CLUB
WALLACE NEFF, ARCHITECT

HOTEL FRANCISCAN, ALBUQUERQUE, NEW MEXICO
Trost and Trost, Architects

A Hotel in Pueblo Architecture

IN designing the new Hotel Franciscan at Albuquerque the architects, Messrs. Trost & Trost of El Paso, Texas, have successfully carried out a type of architecture preeminently typical of New Mexico's early days, for both Pueblo and Spanish influences are very much in evidence. That Messrs. Trost & Trost have achieved something distinctly unique is admitted by critics who have viewed the hostelry and as this was the end sought by the designers, they naturally are gratified with the success attained.

Both the architecture and the furnishings of the hotel are distinctive and original—away from the stereotyped office building style all too frequently adopted by the designers of our big hostelries in the metropolitan cities. The interior decorating has been carried out in keeping with the architecture, with carved beams, murals of early New Mexico, historical scenes and Indian motif stenciled borders predominating. In the Hotel Franciscan the tourist finds something more to interest him than a mere place to eat and sleep. The influence of the early settlers—the Pueblo builders—is felt in the sun-baked concrete walls, and in the colorful paintings in the lobby and mezzanine. The walls are a soft brown while the floors are a dull red tile. The center of the lobby has skylights decorated in Indian characters framed with native borders and broken circles typical of the race. The principal colors are soft blue fading into amethyst, dull red fading into orange and turquoise green.

The hotel is six stories high, occupies a plot of ground 100 by 142 feet and contains 143 guest rooms, all with outside exposure.

HOTEL FRANCISCAN, ALBUQUERQUE
TROST AND TROST, ARCHITECTS

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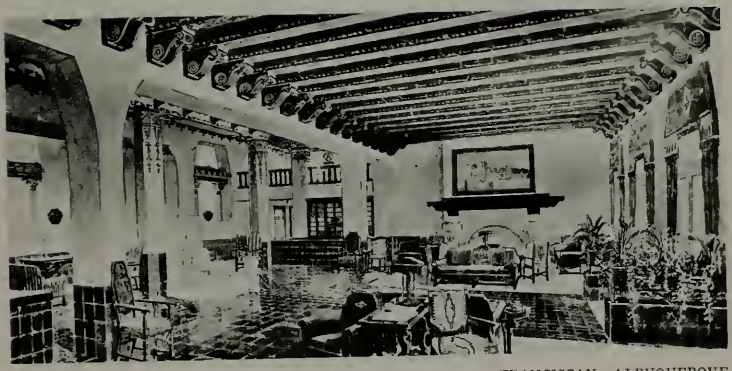


LOBBY, HOTEL FRANCISCAN, ALBUQUERQUE
TROST AND TROST, ARCHITECTS

INTERIORS, HOTEL FRANCISCAN, ALBUQUERQUE
TROST AND TROST, ARCHITECTS

INTERIORS, HOTEL FRANCISCAN, ALBUQUERQUE
TROST AND TROST, ARCHITECTS

HOUSE AT BRENTWOOD PARK, LOS ANGELES
ERNEST IRVING FREESE, ARCHITECT

House Planning by the Compass

By ERNEST IRVING FREESE, Architect

A CURSORY examination of house plans reveals a common defect; namely, that very few houses are planned with a conscientious regard for the proper aspect of their various rooms.

It becomes startlingly evident that the majority of them are given no study whatsoever in relation to the points of the compass. A curious want of thought exists in regard to this matter, even among architects! Yet it should be set down, forthwith, as one of the vital principles of house planning, that all of the main rooms must be so placed as to have the best aspect for light and warmth, in consideration of the purpose they are to serve and the time of day they are to be most in use.

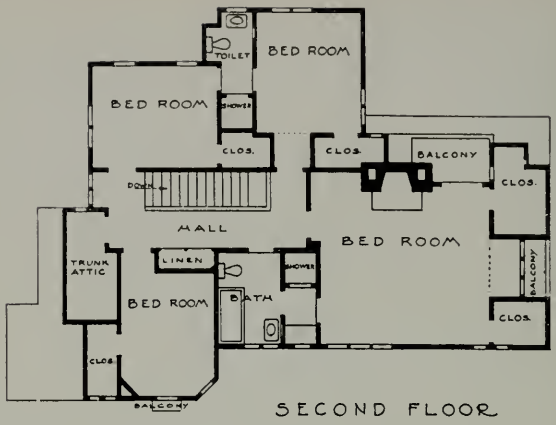
It is interesting to observe that this principle was fully recognized by the ancient Romans in the planning of their dwellings. Vitruvius Polio, an architect of Fano, Italy, writing at the time of Caesar, discourses as follows:

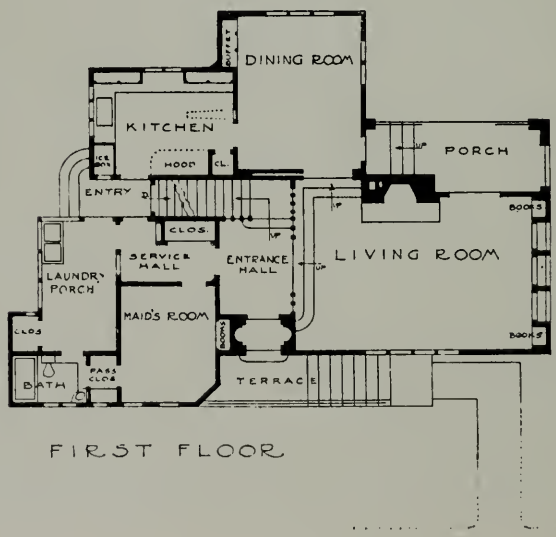
"One part of the world is under the sun's course, another is distant from it, and another, between the two, is temperate. Since, therefore, from the position of the heaven in respect to the earth, from the inclination of the zodiac and from the sun's course, the earth varies in temperature in different parts, so that the form of buildings must be varied according to the temperature of the place and the various aspects of the heavens. In the north, it seems proper that they should face the warmer aspects. Those under the sun's course in southern countries where the heat is oppressive, should be turned toward the north and east. Thus the injury which nature would effect, is evaded by means of art. So in other parts, due allowance is to be made, having regard to their position, in respect to the heavens."

Vitruvius then describes in detail how the various rooms of a Roman dwelling should be planned, as follows:

"Spring and autumn dining-rooms should be toward the east, for then, if the windows be closed until the sun has passed the meridian, they are cool at the time they are wanted for use. Winter dining-rooms and baths are to face the winter west, because the afternoon light is wanted in them; and not less so because the setting sun casts its rays upon them, and by its heat warms the aspect toward the evening hours. Summer dining-rooms should be toward the north, because that aspect, unlike others, is not heated during the summer solstice, but on account of being turned away from the course of the sun, is always cool, and affords health and refreshment. Picture-rooms should have the same aspect, as well as rooms for embroidery and painting, that the colors used therein, by the equability of the light, may preserve their brilliancy. Bed-rooms and book-rooms should be toward the east, for their purposes require the morning light. In book-rooms the books are, in this aspect, preserved from decay; while those that are toward the south and west are injured by the worm and by the damp, which the moist winds generate and nourish and, spreading the damp, make the books to mould . . . The cellar should be lighted from the north, for if it have any opening through which the heat of the sun can penetrate, the wine affected by the heat becomes vapid."

Our mode of life differs considerably from that of the ancients. Moreover, we are not entirely dependent upon the sun to furnish heat for our dwellings. So that a house with three dining-rooms would be





PLANS, HOUSE AT BRENTWOOD PARK, LOS ANGELES
ERNEST IRVING FREESE, ARCHITECT

more or less of a curiosity nowadays. And likewise the wine cellar! However, the vital **principle**, that led Vitruvius to formulate the above hard and fast rules, **remains unchanged.** And it is this principle, rather than the plan of a Roman dwelling, that should be adhered to. It should not be violated even for the sake of getting an especially fine view from the windows. Sunlight is vastly more important from the standpoint of health and cheerfulness than any amount of scenery. In other words, **aspect** should not be sacrificed for **prospect.**

Let us, then, get down to details and consider what is the most favorable aspect for the various rooms of the house, always bearing in mind the fact that, in our temperate clime, the sun, in its journey across the heavens, follows an arc appreciably tilted toward the south so that at high noon the shadows point northward.

The morning-room, or breakfast-room is occupied at the coldest part of the day, at a time when neither the house nor its inmates have become thoroughly warmed. Therefore, this room should invariably have an aspect toward the morning sun, either east or southeast. The level light of early morn streaming in through the windows dissipates the morning grouch and implants good cheer in its stead.

In many houses, however, the breakfast-room is omitted, all meals being served in the dining-room. For the latter, an eastern aspect would then be desirable, so as to let the morning sun into the room at breakfast time. At other times of the day, direct sunlight into the dining-room is usually objectionable. In winter, artificial heat will have warmed the room for the mid-day and evening meals, so that the heat of the sun is not needed. And, in summer time, the direct rays of the western sun intruding into the room while people are seated around the table and cannot shift their places, is far from agreeable, both in respect to light and heat. However, there are times in late autumn and early spring when this room, with only an eastern aspect, is hardly warm enough for comfort, yet it is not cold enough to require artificial heat at the mid-day meal. At these times, a southern aspect would effect just the right balance. For the southern sun, at the time of the mid-day meal, is high enough overhead so as not to project its rays directly across the room into the faces of those seated about the dining table. Thus the room is suffused with warmth, yet the light is such as to cause no undue discomfort to the eyes. So we find that, all things considered, the dining-room should have both an eastern and southern aspect, but never a **western** one. In case a breakfast-room is a part of the plan, then the southern aspect alone, for the dining-room, would fulfill all conditions.

In the living-room we can afford to have direct sunlight at all times of the day. For this is the one room in the house in which people can move about freely and choose their positions. So that here an abundance of sunlight is permissible, even desirable. The living-room should have at least two aspects toward the sun, either south and east, or south and west, preferably the latter.

Now comes the kitchen. Unquestionably, this room should always look toward the north, for, in winter, ample warmth will be supplied by the constant fire, and in summer the aspect should obviously be the coolest possible. Moreover, the equable north light is highly desirable in the performance of the various kitchen duties. Perhaps just a peep of the early rising sun would not be amiss in the kitchen to cheer up the cook before the fires are started. But it should be no more than a

HOUSE AT ST. ANDREWS PLACE, LOS ANGELES
ERNEST IRVING FREESE, ARCHITECT

LIVING ROOM, HOUSE AT ST. ANDREWS PLACE, LOS ANGELES
Ernest Irving Freese, Architect

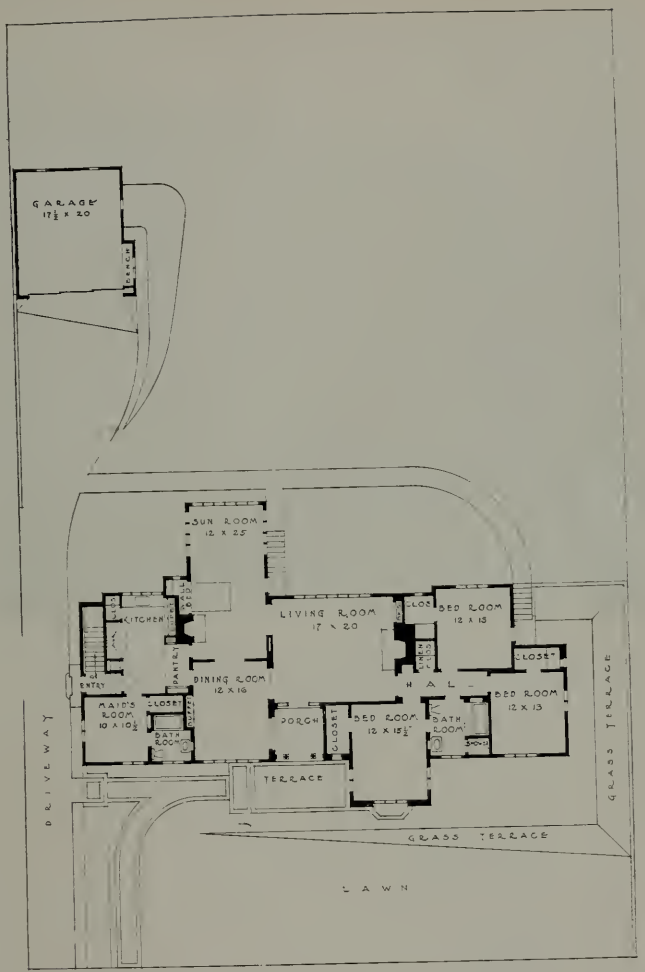
peep. Seldom should the southern or western sun be given access to the kitchen.

If there is to be a nursery in the house, this should invariably have a southern exposure, whatever be the preferable character of the outlook in other directions. In this case an abundance of warmth and sunshine outweighs all other considerations.

Sunlight, in sleeping-rooms, should be considered a prime necessity. Being in use only at night is all the more reason why these rooms should receive the full benefit of clarifying sunshine. An eastern aspect is undoubtedly the best for bed-rooms, because this aspect allows of the sun entering them as soon as the occupants of the night have arisen. A western exposure is objectionable because in that case the sun cannot enter until afternoon, wherefore the room becomes unduly heated toward the evening hours so as not to be conducive to refreshing sleep. Wherever possible, sleeping-rooms should be contrived to have two exposures, so as to allow of a cross circulation of air through the opened windows. In that case, the two most favorable exposures would seem to be directly east and directly south, although any two exposures occurring eastwardly between the north and south points of the compass would fulfill all requirements as to sunlight and circulation.

Finally, the point that I wish to emphasize is exactly this:—No two plans can be perfectly suited to one particular set of conditions. Every plan is a new problem, the successful solution of which, although it often appears hopeless, can be arrived at only through persistent and serious study of its own peculiar conditions and requirements. And this proves beyond a doubt the utter folly of planning a house without regard for the points of the compass. No matter how convenient or "compact" a plan may be, it is nevertheless a failure if it does not conform to this essential principle of proper aspect.

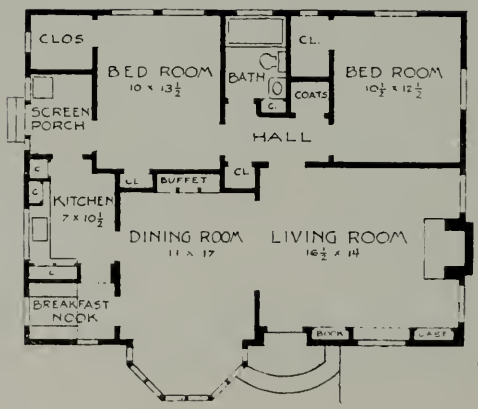
HOUSE AT OCEAN PARK, CALIFORNIA
ERNEST IRVING FREESE, ARCHITECT



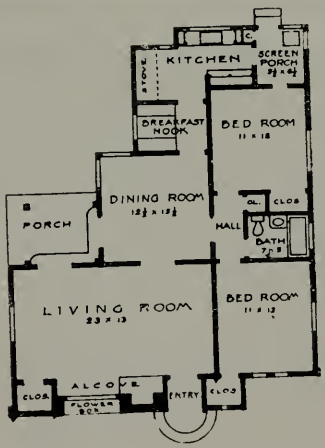
HOUSE AT
2920 FOURTH ST.,
OCEAN PARK, CALIF....

ERNEST IRVING FREESE - ARCHITECT
LOS ANGELES, CALIFORNIA....

PLAN, HOUSE AT OCEAN PARK, CALIFORNIA
ERNEST IRVING FREESE, ARCHITECT



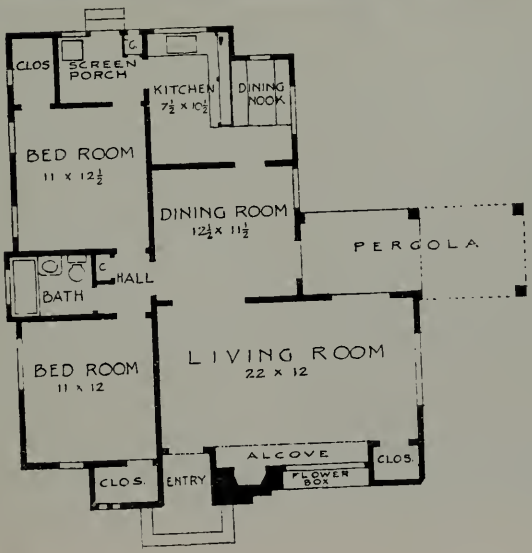
HOUSE AT 828 N. GARDNER ST., LOS ANGELES
ERNEST IRVING FREESE, ARCHITECT



HOUSE AT 736 N. MILTON AVENUE, LOS ANGELES
ERNEST IRVING FREESE, ARCHITECT

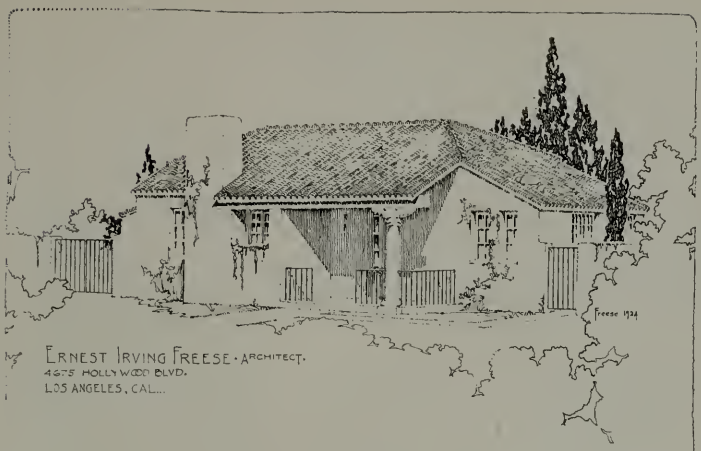
Detail of Entrance Porch, House at 149 St. Andrews Place, Los Angeles.
Ernest Irving Freese, Architect

Plan of House at 149 St. Andrews Place, Los Angeles.
Ernest Irving Freese, Architect



HOUSE AT 839 N. STANLEY AVENUE, LOS ANGELES
ERNEST IRVING FREESE, ARCHITECT

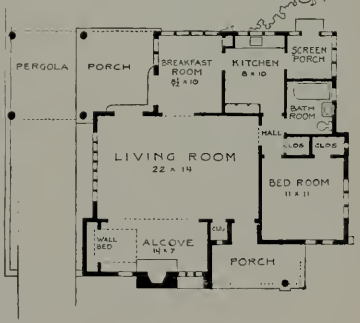
HOUSE AT 742 N. MILTON AVENUE, LOS ANGELES
ERNEST IRVING FREESE, ARCHITECT



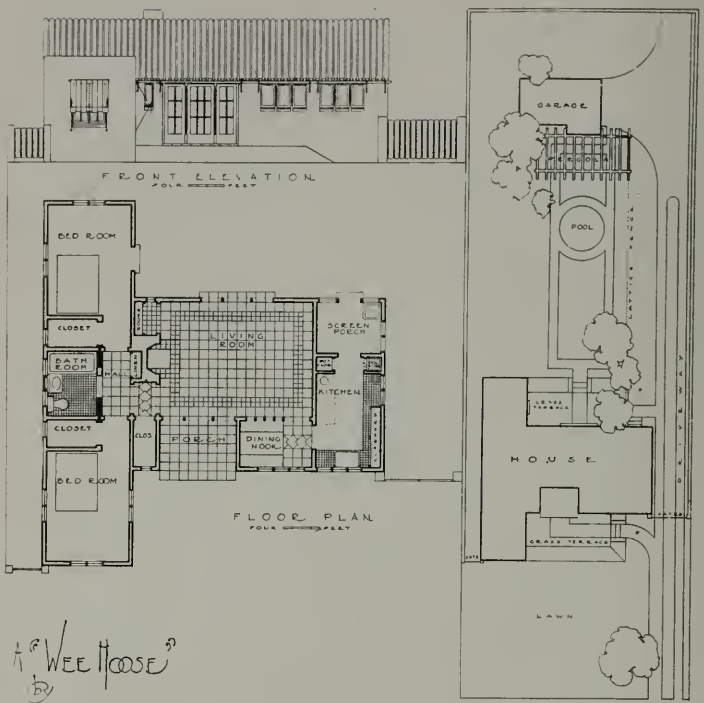
ERNEST IRVING FREESE · ARCHITECT.
4675 HOLLYWOOD BLVD.
LOS ANGELES, CAL.

A MEXICAN DOBE

DESIGN No. 18



DESIGN FOR A MEXICAN DOBE
ERNEST IRVING FREESE, ARCHITECT



A "WEE HOOSE"

By

ERNEST IRVING FREESE, ARCHITECT
4675 HOLLYWOOD BLVD.
LOS ANGELES CAL.

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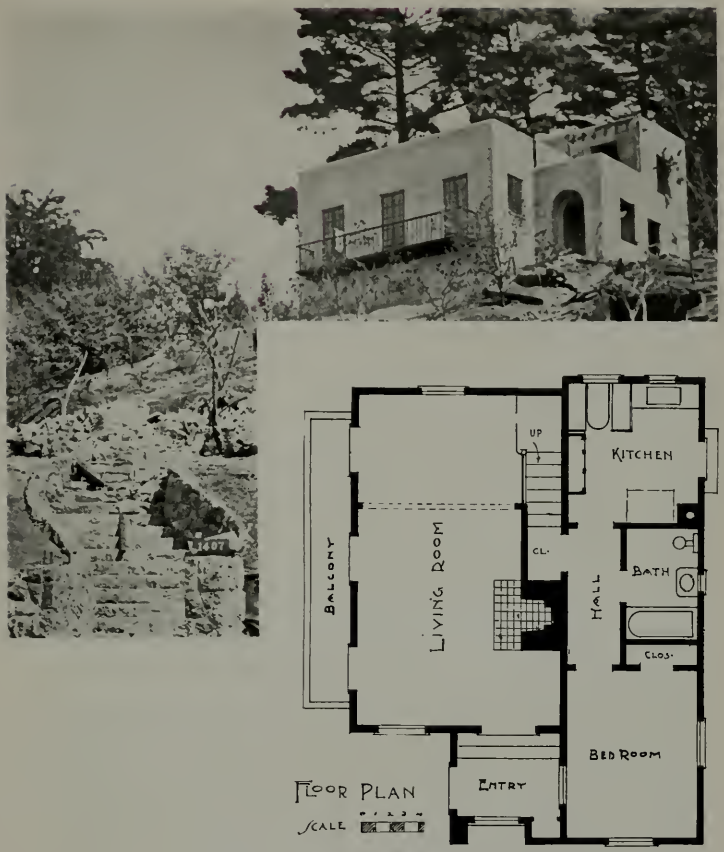


BUNGALOW IN BERKELEY HILLS, BERKELEY, CAL.
E. S. Riddell, Architect. Fowler Mallett, Builder
This house was the center of the Berkeley conflagration last October.

Longest Tunnel

The longest tunnel in the world, capable of supplying 600,000,000 gallons of water daily to New York City, was opened February 9, when officials announced the entry into service of the Shandaken tube, reaching a distance of 18 miles through the heart of the Catskill mountains. A finished cross section of the tunnel is 10 feet 3 inches wide and 11 feet 6 inches high.

COTTAGE IN VILLA TORLONIA, FRASCATI
PHOTOGRAPH BY R. H. BICKEL

COTTAGE IN VILLA TORLONIA, FRASCATI

A Small House at Frascati

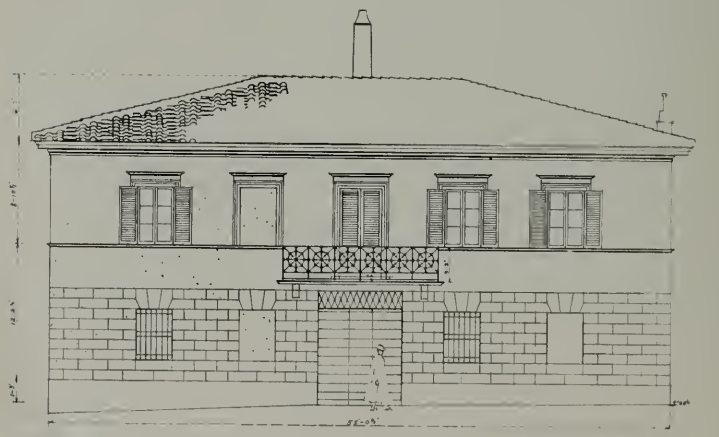
By R. H. BICKEL

TO the traveler who has been in Rome the recollection of a trip to Frascati on the slopes of the Alban Mountains is sure to excite a pleasing remembrance, for this delightful suburb commands a superb view of the Eternal City and the rolling campagna, and has ever been a favorite spot both for the Romans and the tourists. Not so high as Albano, nor as far as Tivoli, Frascati is situated at the happy mean. Aside from its site the town owes its pre-eminence to two factors —the group of Renaissance villas which rise in its background and the splendid wine produced from its vineyards. One goes to see the villas and comes away with a more distinct impression of the wine; no doubt a glass of the wine enables one to admire the villas from a rosier point of view (not that the villas need such an inducement) but in the end the subtle quality of the rare vintage dims the splendor the Renaissance artists created and one returns with deep regret that the delicate quality of the wine prevents it from being transported without loss of fragrance.

But there are other interests, too. In the garden of the Villa Torlonia is a "Villina" of the type that we Americans are continually describing to ourselves in terms of "why cannot we have something like that at home?" etc. It is a simple design, quite classic in detail and restraint, modest in proportions but in nowise cramped. The material is of the usual type of this region—tufa blocks with brick chain courses stuccoed over and toned down to a warm gray color. The plan, redone

MEASURED AND DRAWN BY R. H. BICKEL AND J. R. CULLITY

EAST ELEVATION



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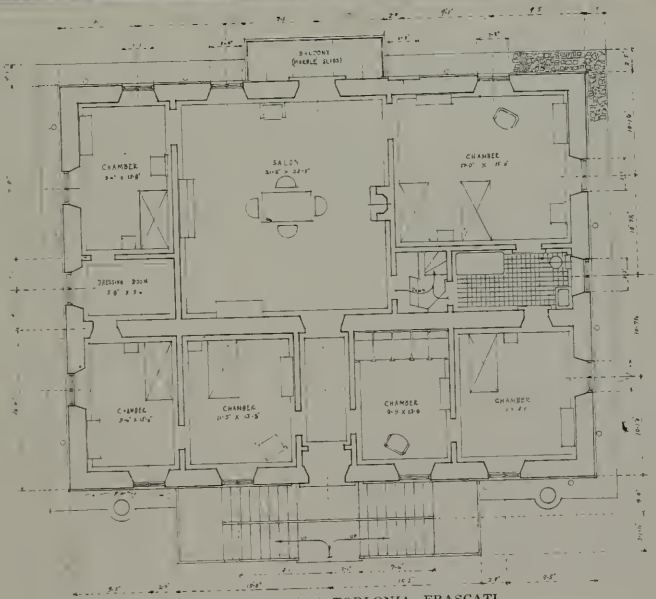
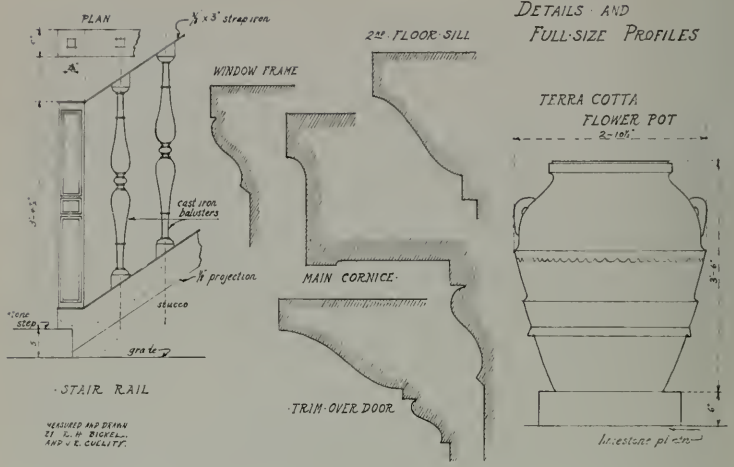
WEST ELEVATION

COTTAGE IN VILLA TORLONIA, FRASCATI



COTTAGE IN VILLA TORLONIA, FRASCATI



COTTAGE IN VILLA TORLONIA, FRASCATI

in modern times, is purely an economical arrangement of space, "a l'Italienne," and is shown as a matter of record. Kitchen and service requirements are taken care of on the lower floor. The most interesting feature of the building is the outside stair leading to the main entrance. This motive, so often cramped and unsuccessfully done in the small house, is here well adapted and creates the impression of correct scale, easy access, and a relief from the usual austerity of classical lines. The flower pots on either side, in which palms are planted, complete the composition. The trees in the foreground are plane-trees.

According to the present occupants this building must be attributed to Annibale Caro, a poet of the 17th Century.

* * * *

New Method of Settling Wage

An experiment in the settlement of wage disputes is being tried out in the electrical trade in New Orleans, which is based on the purchasing value of a dollar now as compared to 1914, since that year is generally accepted as being normal. Both the contractors and journeymen agreed that the average number of days worked in that trade is 300, therefore with a rate of $4 per day in 1914 the average yearly income of each worker was $1,200. The value of the dollar, however, began to depreciate in 1915 until now its only worth 63.8 cents. It was found that although the hourly wage rate had increased to 90 cents the workers' real wages had decreased, and a new scale of $1.05 was determined upon to equalize the difference.

LUNETTE BY GOTTARDO PIAZZONI

Ray Frederick Coyle, Artist

A Tribute

By IRVING F. MORROW, Architect

IT is rarely that an architectural journal feels impelled to notice the passing of artists in other fields, but no one interested in art as a living reality can ignore the untimely death of Ray Frederick Coyle. Indeed, it is impossible to put him down as the practitioner of any particular art. His interests and activities ranged freely over literature, dramatic production, book illustration, mural painting, furniture design, textile design, architectural design, and the interior decoration which was his nominal calling. I omit sculpture and music only because I know no instance of his dealing with these subjects; it is more than probable that he moved congenially among them as well. But he was neither specialist nor closeted artist. Wherever his mind was intrigued, there also was his hand impressed; so that his conceptions always manifested that invigorating contact with reality which is the result of the actual manipulation of materials. In a word, he was not only artist, but craftsman. In an age when even artists specialize, not only in particular arts, but in their particular phases, his ample vigor and curiosity recall the spirit of the more spacious minds of the Renaissance, when one phase of a subject, or even one subject, was too narrow a confinement for a healthy intelligence, and living itself tended to become one great and complex art. One had only to know him casually to feel that all of these manifold activities were real and integral parts of an exuberant life, and that he approached the great adventure of living with gusto and an open mind.

ENTRANCE DETAIL, HOUSE OF MR. R. C. WARNER, PIEDMONT
C. W. McCALL AND CHARLES T. DAVIS, ARCHITECTS

NIPPON KAIJO BUILDING, YOKOHAMA
Reinforced concrete. Undamaged by earthquake.

The Japanese Earthquake and its Effect upon Buildings*

By H. M. HADLEY, District Engineer,
Portland Cement Association, Seattle, Wash.

ON September 1, 1923, occurred the great earthquake and ensuing fires which almost entirely destroyed the city of Yokohama and about half of the city of Tokyo, Japan. This catastrophe was one of the greatest recorded in human history. One estimate places the loss of life at 80,000 with 140,000 classed as missing, and property valued at from four to five billion dollars destroyed. This earthquake was the first in Japan to severely test modern building construction and shortly after its occurrence the writer was sent there by the Portland Cement Association to make a thorough examination of the consequences of the disaster. About two months were spent in the earthquake district, examining buildings of all characters, securing photographs, etc.

The height of construction of buildings is limited by law to one hundred feet and these observations are applicable to buildings of that height or less. Both from the standing undamaged buildings and from the failures, the following major features of earthquake proof construction are to be learned:

1. Firm and unyielding foundations must be obtained.
2. Buildings must possess adequate lateral rigidity and strength to move bodily with their foundations.
3. Skeleton construction carried to the limits common in American practice is inadequate to withstand earthquakes of the severity of this one.

*Much of the information contained in this article was embodied in a lecture by Mr. Hadley before the Alumni Association, Department of Agriculture, University of California, Berkeley, May 27, 1924.

At the Seismological Institute at Tokyo, the most severe shock had a horizontal double amplitude of four inches and occurred in 1.5 seconds. This is equivalent to a force equal to 1/11th of the weight of a structure. Greater motion, approximately six inches, was recorded, but this motion was slower and the most severe dynamic effect was produced by the first named shock. In this earthquake as in the great majority of those recorded in the past, the vertical motion was relatively insignificant. The observatory is situated on the high, firmer ground in Tokyo. The earthquake effects were pronouncedly more severe in the low-lying ground on which the great majority of the modern buildings stood.

Reviewing the behavior of modern buildings, the following summary can be made:

NATIONAL BANK OF JAPAN, TOKYO
Reinforced concrete skeleton, brick walls, stone veneer. Slightly damaged.

The use of structural steel for large buildings was comparatively recent. In Tokyo there were sixteen buildings of this type completed or under construction when the earthquake occurred. Six of these stood absolutely undamaged while ten sustained more or less damage.

Under the quick earthquake motion, a momentary deflection of the structural steel columns occurs and the horizontal load is thrown upon the masonry construction in the walls, partitions, elevator enclosures, etc. If this masonry possesses adequate power of resistance, no damage ensues, the buildings being carried as blocks or units with their foundations. When, however, the masonry construction does not possess adequate strength, it is shattered and broken. From this point on, the resistance is furnished by the structural steel alone, and except in one instance, no serious damage to the structural steel frame occurred.

The structural frame of a building is erected, however, not for its own sake, but to provide definite conditions of occupancy and a building

which has sustained the shattering of its exterior walls and interior partitions cannot be regarded as wholly satisfactory even if the frame itself be undamaged. The common characteristic of the six undamaged steel frame buildings was their use of reinforced concrete wall construction. Steel frame mill buildings outside of the fire districts with walls and roof of galvanized iron swayed freely and sustained no damage, but they were the only type of steel building which could sway without causing damage.

Hundreds of reinforced concrete buildings of various sizes, many up to the full one hundred feet height existed in the earthquake districts. Their performance in general was highly satisfactory. A survey of 592 reinforced concrete buildings in Tokyo, made by the Tokyo Building

MARUNOUCHI HOTEL, TOKYO
Under construction and absolutely undamaged. Steel frame and concrete walls.

Department, showed 462, or 78 per cent of the total, undamaged. There were eight entire collapses and eleven partial collapses, the remaining buildings being classified as 42 greatly damaged and 69 partially damaged. Except certain buildings destroyed by fire, the failures throughout the earthquake district were in practically all instances due to inadequate foundations or lack of lateral rigidity. The factory buildings where skeleton construction had been carried to extreme lengths and where the walls were largely of glass were particularly vulnerable. The requirement of lateral strength does not necessitate a very extensive use of solid wall construction, but sufficient must be incorporated in the buildings to make the structure an unyielding whole.

Those brick buildings which escaped without damage were built with heavy exterior and division walls, sufficient to make the structure a solid unit.

Complete destruction of wooden buildings naturally resulted from

PATENT OFFICE EXHIBITION BUILDING, TOKYO
Reinforced concrete. Foundation failure. Side walls settled approximately two feet.

INDUSTRIAL BANK OF JAPAN, TOKYO
Structural steel frame and reinforced concrete wall construction. Undamaged.

CASCADE BREWERY, TSURUMI, OF REINFORCED CONCRETE. UNDAMAGED.

REINFORCED CONCRETE FLOUR MILL UNDER CONSTRUCTION.
First story columns slightly damaged.

LAMP FACTORY BUILDING, KAWASAKI, OF WOOD CONSTRUCTION. UNDAMAGED.

NICHI NICHI BUILDING, TOKYO, OF REINFORCED CONCRETE. UNDAMAGED.

SMALL BURNED OUT, REINFORCED CONCRETE BUILDING, TOKYO. UNDAMAGED.

BRICK BUILDINGS, TOKYO. MARUNOUCHI DISTRICT. UNDAMAGED.

MITSUI BUSSAN GROUP OF BUILDINGS, TOKYO

Reinforced concrete office building in center burned out, but undamaged by earthquake. Building at right of reinforced concrete escaped damage by earthquake and fire. Contained three million dollars worth of silk. Building at left, wooden interior, reinforced concrete bearing walls, brick veneer, escaped damage from earthquake and fire.

the great conflagration which swept Tokyo and Yokohama. Outside of the fire zones their behavior, where adequately braced and stiffened, was excellent. The combination of great strength with light weight which is the inherent quality of wood, is most excellent in structures subjected to earthquakes. Here again, however, the buildings which showed themselves most satisfactory were those which possessed the greatest amount of rigidity, and numerous failures of course, occurred in wooden building inadequately braced and stiffened.

The accompanying photographs show typical buildings of various materials and illustrate the points made in the above discussion.

* * * *

Elevators Are a City's Greatest Carriers

NEW YORK'S heaviest passenger traffic moves vertically. According to Mr. Charles Brady, Superintendent of Buildings for the Borough of Manhattan, the daily passenger list of the city's elevators, averaging more than 9,000,000, is greater than the combined number carried by street railways, subways and elevated lines.

Up and down, hour after hour throughout the days of the week, the little steel cars flit from floor to floor, swallowing up throngs only to disgorge them almost immediately. Throughout the city there are more than 12,000 of them, only a few hundred less than all the cars on all the horizontal lines of transportation. Covering almost 50,000 miles daily, they move in shaftways that have been estimated to aggregate more than the mileage of all the subway and elevated lines.

Architecture as a Profession

By WILLIAM L. STEELE, F.A.I.A.

ARCHITECTURE has cradled and sheltered the human race from the dawn of civilization until now. From the caves and mud huts of primitive man to that elaborate product of art, ingenuity and mechanical skill, the modern home, architecture claims the entire list. Architecture made bricks in Chaldea, piled up the pyramids of Egypt, built on the shores of the Aegean those marble temples which made beauty no longer elusive and fugitive, but permanent and eternal. Architecture ransacked the East for the treasures which housed sumptuous Rome, architecture followed the new impulse of Christianity and produced St. Sophia and the great churches of the East. Architecture was in the blood of the Crusaders, and Oriental splendor came back with them to make Venice gorgeous. Architecture became religious—nay, was religion itself—when it produced those most poetic of all human endeavors, the Gothic cathedrals. Human history is architecture. Wherever civilization has raised its head there are buildings. They form the most truthful and intimate record of human life that we know. It is all there. The Egyptian fear of immortality, the Greek willingness to live in the joyful present, the Roman brutality and arrogance, the Byzantine uncouthness awakening to beauty, the Western theology and fervent faith demonstrating its intricate reasoning.

Architecture defied Time and built for the ages. Monuments sacred to the memory of some plaything of a potentate have passed from their personal significance, and belong to architecture forever. Men revere the work of the unknown architect though they may have forgotten who he was or who afforded him creative opportunity. Men pass, but their works live after them and nothing else material can rival the permanence of that which architecture has wrought. Not only do we read the character of the men of old from their buildings, but what they did still has power to inspire us. The divine fire that coursed in the veins of him who wrought the Parthenon, after two thousand years, still thrills the lover of beauty and calls him away from money changing and trafficking to the pursuit of 'the things that are lovely and of good report.' * * *

* * * * *

We should not expect our architects to be economists, statesmen, or 'boosters,' any more than we expect these things of our clergy, our lawyers, or our doctors. But neither should the architects be any less qualified in any line of human interest than those whom architects aspire to call professional brethren. The fact is that the battle is on, in all the professions, between commercialism and professionalism. For the moment our commercialized fellow practitioners seem to be having the best of it. They are getting a lot of jobs and seem to be making money. But all hope for the future is bound up in a close-knit fellowship between the professionally minded in all the professions. Not a blind, partisan, trades-union alliance. No, not at all. But a fellowship between men of understanding minds, broad culture, ideals held in common. If you of other callings can recognize the need of beauty and spirituality in civilization, and are willing to make sacrifices to recall some of those lost values into our lives, you will find no field of richer promise than the great, bountiful spread of human endeavor wherein men become Godlike through the joyful exercise of their creative faculties. To

design, to paint, to carve, to weave, to build—all these things mean work, transfigured; work, changed and glorified; work a primeval curse—and lo! it has become our greatest blessing.

* * * *

Painting Specifications

"THE architects' specifications tell us what work is to be done, how it is to be finished, and usually what kind of materials are to be used. They sometimes tell us just what brand must be employed on the work.

"The specifications are presumed to be complete, explaining just what the painter has to do," says Mr. Ashmun Kelly in "Building Age." "But the specifications are not always full and complete in details, hence the painter should carefully read them, and ascertain whether there are any things to do that are not specified on the plans.

"For instance, there may be storm doors, storm sash, panel backs, and boxes for inside blinds, hall and window seats, dressers, bathroom and storeroom accessories, and perhaps other features, work he must do, without a hint of them on the plans or in the specifications.

"Will you be paid for the work? Probably not. The owner may be honest enough to recompense you, but it is not at all certain that he will. Be on the sure side; ask questions, look over the specifications of other mechanics on the work. The plasterer's work will be on walls and ceilings, and his measurements should be useful to you. There are various ways of finishing woodwork, hence be sure to know exactly what form of finish is specified. For instance, the hardwood finish may be done in several quite different ways, some inexpensive as to labor, while others may be quite expensive.

"You can water-stain, shellac and wax a job, a very cheap form of finish, or fill, stain, varnish with several coats, rub and polish, and so on, work requiring much time and skill. By estimating wrong on such work you stand to lose money. And there is the glass; ascertain whether you are to furnish it or not, or only to set and glaze it.

"Ascertain also what kind or quality of materials you are to furnish, how many coats of this and that, and be sure to find out whether woodwork is to be primed before or after putting up. Are picture mouldings to be painted? Are they to be given the last coat of paint or stain before or after the paper is hung?

"Any whitewashing in cellar? How about the radiators? Who is to finish them? Are any walls to be painted? If so, how many coats? What kind of paint? Are the walls and ceilings to be kalsomined, or decorated in water colors? What is the character of the decorations?

"Are shingles to be stained? If so, are they to be dipped or coated on the roof or both? What brand of stain? How many colors of stain to be applied? How many coats of stain? Are they to be blended on the roofs?

"Then there is the matter of varnish—what brands or kinds are to be used? How many coats, on different parts of work?

"Such hints as we have given should be enough to indicate the method to be followed in reading plans and specifications, and making estimates thereon.

"Take nothing for granted, be positive in what you know or understand about the matter. In which case your chances for coming out right will not depend upon whether you have or have not been circumspect in studying plans and specifications. And bid high enough.

"We should not omit calling attention also to the character and condition of the work that is to be done. The woodwork or walls may be either smooth and in good shape for finishing, or may be rough and require considerable work making them fit. This is a matter of labor. Then a poor surface will take more material, this being a matter of cost. Look over the pine woodwork and note how the knots abound, whether many or few, large or small.

"See how much putty work will be necessary to stop holes and make a solid job. Then see about how much work will be required in furnishing and rigging scaffolding. This item is very important. It will make considerable difference in the cost of doing a job. It has to be put up and—don't forget—it has to be taken down. It may occur that you can use scaffolding that has been used by other workmen, and has not been removed. Sometimes much work can be done in this manner. On public work, such as churches and other high buildings, considerable scaffolding is usually required. Make this a separate item.

"A workman can do more work on or very near the ground as a rule than he can do on certain forms of scaffolding. He must be careful about falling, and some men are naturally timid.

"As a general thing all exterior work requires more time than a corresponding amount of interior work. This is particularly true of roof work when ladders or staging have to be employed. It is important to look up these details when estimating on painting work."

* * * *

Converting Old Buildings into Modern Garages

Old theatre buildings, armories, and the like seem to be giving way to the garage. About a year ago, in Seattle, the old Grand theater building was remodeled into a five-story Motoramp garage. Across the street from the new Olympic Hotel, now under construction in that city, is a building which has been known for many years as the Arena. This was constructed in November, 1915, and was used during the winter months as an ice palace and during the summer for conventions, festivals and exhibitions. It is 119 feet wide and 240 feet long, and has a seating capacity of about 7000 people.

With the urgent necessity for providing parking and storage space for thousands of cars belonging to tenants in what is known as the Metropolitan Center, and with the idea of caring for the cars of guests of the new Olympic Hotel, it was decided to turn the Arena into a three and a half story, 450 car garage, with a possibility of two more floors being added at some future time.

Construction work has already begun on these alterations, and it is expected that the building will be ready for occupancy within a few months. This is another example of the trend of the times which calls for the conversion of obsolete types of buildings into modern commercial successes.

* * * *

The Witchery of Candles

Candles possess a witchery of their own and are singularly lovely upon a well-appointed table. They should be very tall—well above eye-level—and their flaming beauty should never be hidden by shades. Choose tall, slender candlesticks of simple design, and plain, tapering candles.

U. S. ARMY SUPPLY BASE, BROOKLYN, N. Y.
CASS GILBERT,
ARCHITECT.

SAN FRANCISCO
PUBLIC LIBRARY

Reinforced Concrete Architecture These Past Twenty Years*

By ALBERT KAHN
Architect, Detroit

MUCH has been done in the field of reinforced concrete in a comparatively short time, both in points of engineering and architectural expression. Unexpected results have been attained, progress has been constant and consistent, but much still remains to be done and undreamed of possibilities will be realities within the lifetime of many of us.

Naturally, the early history is full of experiments. That such systems as were exploited at the outset by metal lath, wire fence and cable manufacturers did not result in more failures is inexplicable and miraculous. When we recall the numerous structures erected at the time with floors of 20 feet and 30 feet spans of cinder concrete, reinforced with cables stretched from wall to wall, the structural design mere guess work, we can only marvel at the protection of a kind Providence and hope that the interior partitions in these buildings may never be removed. Many indeed were the fools who rushed in where angels feared to tread. But fools, men with vision, are necessary in the progress of mankind and were needed in the development of reinforced concrete. Of course there were failures, serious ones, but upon these failures were built the successes that followed.

We recall, as with all things new, the serious opposition encountered at the outset, not only from laymen who could not comprehend how a wet mixture of sand, stone and Portland cement with a certain number of steel rods placed about could carry its own dead weight, much less heavy live loads, but even more from engineers and architects. Indeed, the chief difficulty was to overcome the resistance and inertia of these professional men who had feelings of doubt and clung tenaciously to the forms of construction with which they were more familiar.

Then there was the opposition of the clay tile industry, which with the introduction and development of the new construction, feared ruin for itself. Who does not recall the trade journals with glaring accounts of concrete failures and articles predicting the direst happenings?

The structural steel interests were no less strenuous in their vilification. They, also, feared heavy inroads upon their product. We well know how ridiculous these onslaughts, now that it has proved that there is need for all, indeed more need than ever for all.

Even the lumber interests combated the advancement of the new construction, but they now find that their material is required in greater quantities than ever. The lumber necessary for form work being no small factor in this increased demand.

A very serious obstacle to the development of reinforced concrete was no doubt the over-enthusiasm of its early devotees who, believing it a panacea, undertook to use it for any and every problem. We have since learned that isolated columns and beams are cheaper and quicker of erection in structural steel fire-proofed, and that long span trusses high up are as a rule more costly and more difficult to construct in reinforced concrete than in structural steel. Some ill-advised undertakings naturally had a retarding effect upon the progress of the art but they

*Abstracted from a paper presented as part of Symposium on Progress of Concrete Construction in 20 years at the 20th Annual Convention, American Concrete Institute, Chicago, February 27, 1924. Illustrations by courtesy of Concrete, Detroit.

U. S. ARMY SUPPLY BASE, BROOKLYN, N. Y.
CASS GILBERT, ARCHITECT

Picture shows connecting bridges between Warehouse and Administration Building.

U. S. ARMY SUPPLY BASE, BROOKLYN, N. Y.
CASS GILBERT, ARCHITECT

Note Cantilever Balconies in Craneway for direct transfer of goods from cars to warehouse.

U. S. ARMY SUPPLY BASE, BROOKLYN, N. Y.
CASS GILBERT,
ARCHITECT

U. S. ARMY SUPPLY BASE, BROOKLYN, N. Y.
CASS GILBERT, ARCHITECT

U. S. ARMY SUPPLY BASE, BROOKLYN, N. Y.
Cass Gilbert, Architect

were necessary to determine the limitations of the new construction. Today the practical engineer or architect quickly decides which best serves its specific purpose and does not hesitate to use the different materials in combination, to the end of producing the best result, most economically.

Another hindrance was the lack of authentic data on reinforced concrete. Everybody devised his own method of computation and needless to say no two agreed. As to the methods of constructing form work and when to strike forms were mere guess work and many a mishap caused by the lack of definite knowledge or information. Out of this chaos there developed a few men who by means of tests and experiments contributed their ideas and results of tests for safe formulae and methods. Monier, Coignet, Considere and Hennebique gave reinforced concrete its real start. Its present highly developed state in this country, however, is due in the largest measure to engineers connected with commercial institutions who possessed the courage and initiative to design and build structures in the more practical methods conceived by them. They were the real pioneers, did the real work, made the mistakes and suffered the consequences. Their errors and resultant losses

formed the foundations upon which the theory and practice of reinforced concrete was really established.

Chief among the objections to reinforced concrete was its dead weight and consequent size of the columns. Thereupon were developed the hooped column and the various types of hollow floors.

The introduction of the flat slab system created great consternation in the minds of architects and engineers. How was it to be calculated? It stood up, but how and why? Methods of computation had to be revised and the dependence upon tests was increased. Whatever the extravagant claims made for this by its first advocate, it is one of the most important contributions of America.

History is still in the making. There will be further developments in practice, building laws will be revised to take fuller advantage of the potentialities of reinforced concrete, concrete design will grow lighter, more elastic and more economical. Greater knowledge of the subject, better materials, more perfect control and the concerted efforts of the American Concrete Institute will help to bring this about.

Now what of the future for reinforced concrete? I am convinced that we have only made a fair start and that its development both structural and artistic will exceed any present expectation. Furthermore I believe that concrete in its most direct form will grow in use for exterior facings. Gradually we shall accustom ourselves to form marks; we shall not only accept them but take advantage thereof; we shall eliminate cement washing and rubbing even pointing and gain an artistic effect through the play of light and shade and emphasis of the monolithic mass which it really is. Furthermore we shall accustom ourselves to weather stains and make a virtue thereof, just as the grime of London only adds interest to its architecture. We shall pay more attention to design in mass, in interesting outlines and less to minor details. The way has been shown in a number of existing works. Others will carry on and continue to develop the new material.

* * * *

Story of Cement in the Movies

"The Story of Portland Cement" is the latest addition to the series of industrial motion picture films released by the Department of the Interior, through the Bureau of Mines. This film, which is one reel in length, has been prepared, in co-operation with the Portland Cement Association, in commemoration of the 100th anniversary of the invention of Portland cement in 1824. The film depicts vividly the quarrying of the raw cement rock, one especially striking scene being the setting off by electrical means of a huge dynamite blast. The loading of the loose cement rock into cars by steam shovels is shown. The pulverizing of the cement rock in giant crushers and the transporting of the crushed material on belt conveyors are depicted. Methods of wet and dry grinding of the crushed cement rock are shown. Views are given of the drying of the ground material in kilns for the purpose of driving off water and carbon dioxide. Laboratory testing methods by which the manufacture of Portland cement is at all times kept under careful chemical control are shown.

BUILDINGS FOR GLADDING McBEAN & CO., OAKLAND
Lewis P. Hobart, Architect

City Planning and Housing

CAROL ARONOVICI, Associate Editor

Status of Zoning in California

By FRANK D. STRINGHAM
Berkeley, California

IT must be admitted that the decision of the District Court of Appeals of the Second Appellate District of California in the case of Miller vs. Board of Public Works of Los Angeles, (Dec. 21, 1923) holding an ordinance invalid which prohibited the erection of a residence designed for more than two families, and the decision of the Supreme Court of Missouri in the case of State vs. McKelvey (Oct. 6, 1923) holding zoning ordinance of St. Louis void, will operate to retard certain zoning activities. To be sure, the former is not a decision of the highest Court of California, and the latter decision is by a divided court, there being four prevailing and three dissenting opinions. There is comfort in what Justice White says in his written dissent, to-wit:

"The great weight of authority, both federal and state, is to the effect that a reasonable zoning ordinance is constitutional, and the determination of what is reasonable varies with the changing conditions incident to modern development and civilization." Further on in his opinion he says:

"Standards of living are much higher than they used to be and are growing higher and more exacting with the material improvement of peoples' condition. It has not been so very long since people lived over their stables, allowed chickens to roost in the rafters of their dwelling, and pigs to make themselves comfortable under the floor. Such was not known to be unsanitary."

I do not believe that these decisions will long remain unchallenged. The judicially made law on this subject is going through a transitional period. The courts are finding it difficult to resist the force of public opinion which seems to favor reasonable zoning regulations wherever they are tried.

The experience of Berkeley is more or less typical. Berkeley first adopted a zoning ordinance in 1916. This ordinance defined 27 different uses of classifications, but did not attempt to actually zone any part of the city. The Council acted only upon petition, and formed some 8 or 10 isolated single-family and two-family districts before the present comprehensive zone ordinance with 8 classifications was adopted in 1920. All of the 27 classifications except five were then repealed, and even today a large portion of the city is zoned into single-family residence districts under the old ordinance.

The comprehensive zone ordinance, (666 N. S.) divided the whole city primarily into three use classifications—residence, business and manufacturing. It was based upon the New York plan, but went further and subdivided the business and factory zones so that there was ultimately a total of eight classifications. This was done in order to distinguish between obnoxious factories, such as soap works, reduction works, etc., and textile factories, and also to provide separate classifica-

tions for churches, oil service stations, dyeing and cleaning works, garages, hospitals and public buildings.

Many public meetings were held for the discussion of the proposed ordinance and it was adopted subject to a favorable advisory vote of the people. During its four years operation in Berkeley no attempt has been made to repeal it. It would seem that a large majority of people believe in zoning and are satisfied that it affords the kind of protection that they want. Before that law was passed a public garage, an oil station, a hospital, a grocery store or a cleaning and dyeing establishment could locate where it pleased, and sometimes one establishment would practically ruin a whole block for residential purposes, or even for retail business. The following examples illustrate how it operates; rulings made since July 1, 1923:

1. An application to locate an oil service station on Claremont avenue and Prince street was denied on the ground that it was not needed and would unnecessarily injure residential property.

2. An application to locate an undertaking establishment in an old house on University avenue was denied because it was becoming a high class retail business district. The undertaker found a better location on Milvia street and was satisfied with the decision.

3. A petition to locate a Baptist Mission school for Oriental orphans in a residence district adjoining a factory zone was granted. An old house bought for the purpose was repaired and repainted, and proved to be a benefit to the district.

4. A petition to change the use of a building from a creamery to a public garage was denied.

5. A petition to permit the building of a Masonic temple in a business district was granted.

The adoption of the zoning law of New York City in July, 1916, is the most important event in the history of zoning, and it is remarkable that our largest city should have been the first to attempt anything so revolutionary.

It did not attempt the higher classifications of some of our western cities, but it went further than some ordinances in that it limited the height of buildings and the area of the lot to be occupied. New York very wisely did not risk defeat by inviting adverse decisions in the courts. It has fared well in other particulars.

Mr. E. M. Bassett, attorney for New York City in zoning cases, wrote on March 21, 1923, as follows:

"In this city there has not been a single court decision against the zoning, and it is generally considered that this is due to the Board of Appeals passing on about 150 border-line cases a year."

In our small cities we cannot afford to have a Board of Appeals, and the City Council has to pass upon these matters with the advice of an unpaid City Planning Commission. In Berkeley the Planning Commission has functioned continuously for more than eight years without compensation, and in a manner very much to its credit—thus rendering a great public service.

When Mr. Locke, secretary of the League of California Municipalities, was preparing the program for the annual convention last year at Coronado, he sent out a questionnaire to all cities asking what subjects they wished to have discussed. Zoning received the highest number of votes. This shows the interest manifested in this very important subject. People are finding out that it affords the protection they have

long been looking for. Before zoning they had to rely on building restrictions in deeds.

The greatest difficulties in zoning are presented by the so-called border line cases and by non-conforming uses. The latter are called exceptions and arise from the fact that cities must be taken as we find them. A zoning ordinance cannot legally be made retroactive except as to certain obnoxious businesses, and it is therefore wise to zone as soon as possible and before more of these exceptions are created.

Many examples could be given of the economic loss caused by want of zoning. In Berkeley one entire block in a residential section is blighted by the existence of a stable yard. Twenty-five per cent of the land within the city limits of St. Louis was a few years ago unoccupied, while thousands of people built homes outside of the city limits to get away from apartment houses, garages and other undesirable structures. Mr. Lawson Purdy, assessor of New York City, has pointed out how unrestricted building in that city has taken millions of dollars from the assessment rolls.

It is interesting to note that cities in Denmark and Sweden have followed the example of New York, and that Japan has been studying our zoning laws. It seems to me only reasonable that when thousands of people have to live close to one another, as they do in our cities, that they should be regulated in the use of their property so as not to cause discomfort and annoyance to their neighbors.

As I have intimated at the outset, there has been a great deal of discussion about the legality of zoning, and there are many conflicting decisions on this subject. It is significant, however, that over 200 cities have zoning laws and that there is an ever increasing demand for their enactment in other cities. In Berkeley the Council room is frequently crowded with petitioners or protestants seeking protection. Do you believe that the courts can long withstand the force of public opinion? There is as much chance of repealing the eighteenth amendment as there is of repealing the zoning resolution of New York for example.

The single family residence will be the last class of structure to be protected by the courts. For that reason single or double-family residence districts should be created only where the property owners are almost unanimously in favor of such classification. The chief struggle should be made against the improper locations of the store, the factory, the public garage and the apartment house.

There is a class of people who resist every attempt at government regulation upon the theory that it interferes with their personal liberty. This theory is an excellent one so long as your neighbor is considerate, but if he builds an apartment house where none is needed in order to profit by overlooking his neighbor's open gardens, and actually damaging their property, liberty becomes a one-sided affair.

These zone laws have come into being on account of the very rapid and haphazard growth of our cities. In 1876 a famous decision was made by the Supreme Court of the United States, Munn vs. Illinois. It upheld a state law limiting the charges that might be made for the storage of grain in terminal warehouses. Such a decision today would excite no comment. At that time it marked a notable extension of the so-called "police power" of the states. It came as a result of a strong public opinion against the exaction of excessive charges by private concerns. The statute limiting the charges conflicted with previous notions

of personal liberty, but it was allowed to stand. Thus do the courts respond to public demand for the correction of abuses.

In spite of some adverse decisions and of the claim that one should be permitted to use his property as he wishes, I am of the opinion that reasonable zoning regulations will be generally sustained and that they have come to stay. There may be some reactions, some mistakes, some misapplications, but the general principle is right, and within constitutional limitations, one should be compelled to so use his own property as not to injure another.

* * * *

Declares Zoning Protection of Property Rights

COMMENTING on the defeat in the courts of the first attack on the new zoning ordinance of Chicago, in which an injunction was sought to prevent the city officials interfering with the building of an apartment house in a single residence district, Mr. Halbert P. Gillette is quoted as saying:

"The limitation of use of certain city areas, or zones, is the result of no mere desire to meddle. It is undertaken as a protection of property values and of rights which property owners believe they are entitled to enjoy. Every person has seen some district of comfortable and pleasant homes spoiled by the invasion of a factory, garage or other objectionable establishment. Residents have left and their places have been taken by others whose financial means permitted no better location; old residents who could not leave have had to put up with changed and undesirable surroundings; property values have fallen, and the whole district has remained for years nondescript—neither industrial nor residential. If the lands ultimately bring higher prices for industrial than they did for residential use, the houses, which usually are worth much more than the lands, are practically a total loss. Further, there is the period of change, sometimes very long, during which instead of an increase there is often a large reduction in most of the land values. These losses are measurable more or less accurately in terms of money, but the hardship of being forced to give up one's chosen home is not so measurable. Practically it is eviction. The intrusion of stores and apartment buildings is very little less serious than the intrusion of industry. The residents will be slower to give up their homes, but their ultimate removal is inevitable. A single family house is ruined for most people when an apartment is built beside it.

"The case of a retail store area invaded by industry is of the same character in all but two ways—sentiment and personal attachment are not involved; and instead of the prospect of an ultimate increase in land value there is the prospect of a permanent reduction. One might think that under this last condition such changes would not take place, but the fact is that the poorer use repeatedly has driven out the better. An individual sees a chance for profit—often temporary—in converting his property to an industrial service. The retail store or office adjoining it is immediately depressed and in time is given up as no longer suitable for its old purpose. It, too, is then turned over to industry, and the evil influence is extended. Thus the change is continued, and rarely is it checked except by heroic measures."

AIRPLANE VIEW, LUTHER BURBANK PARK, SANTA ROSA
Carol Aronovici, City Planning Consultant

Luther Burbank and Santa Rosa's Testimonial

NO one in this country has contributed more towards the technique of plant breeding and the rise in the standard as well as the widening of the scope of plant culture than Luther Burbank.

Working within a comparatively small community and using two small areas of five and fifteen acres each in Santa Rosa and Sebastopol respectively, Luther Burbank has done a great and unusual creative work for which the world owes him the gratitude due the leader in practical idealism.

The citizens of Santa Rosa have for some years been endeavoring to give Mr. Burbank a testimonial that would be consistent with the service that he has rendered to the world and to his community.

One of the Jewish merchants of the community conceived the idea of developing for Santa Rosa a park that would be a fitting tribute and memorial to the flower wizard and that would bear his name.

The community readily accepted the suggestion and secured a tract of land of 39 acres on the city boundary and a plan of development for the Burbank Creations Park was prepared under the direction of Dr. Carol Aronovici, city planning consultant.

The park plans contain creations gardens in which Mr. Burbank's work will be exemplified, a recreational park, an outdoor theatre, and a set of buildings containing an auditorium, laboratory, lecture hall, library and museum for horticultural materials.

In the rear of the auditorium it is proposed to place an outdoor stadium connected with the auditorium stage so that both seating facilities may be used at the same time.

Roger Noble Burnham, the sculptor, modeled a group representing the hand of God holding the earth to be moulded by man.

Japan Potential Market for American Roofing Materials

THERE are probabilities that the Japanese earthquake will cause a large increase in the sale of American roofing materials to Japan, says Assistant Trade Commissioner Paul P. Steindorf who has recently returned from Tokyo. Formerly the use of foreign roofing was confined to the modern business and industrial buildings in the larger cities, Mr. Steindorf states, practically all native style houses having either tile or thatched roofs. The earthquake proved conclusively that such roofs were entirely too heavy for the light frame construction of Japanese houses. There were numerous instances where houses with tile or thatched roofs collapsed while similar structures having lighter roofs escaped with slight damage.

At the present time permanent construction in the cities of Tokyo and Yokohama is prohibited pending the formation by the Government of new building regulations and city plans. It is probable that these new building regulations will provide for lighter roofs. In any case the earthquake has created a desire on the part of private builders for such roofs in order to reduce the possibility of collapse.

Permanent reconstruction will require the replacement of 350,000 houses in the cities of Tokyo and Yokohama while the surrounding area will require another 150,000 buildings. In addition there are possibilities of sales throughout Japan since there is no assurance that the disaster of September 1, will not be repeated in another section.

The important considerations for a roofing on the Japanese market are lightness, fire resistance, cheapness and conformity with Japanese taste and requirements. Many types of American roofing materials answer the requirements. Cheapness, of course, refers to the price laid down in Japan. This will eliminate certain types which are subject to heavy transportation costs or handling charges or which are liable to excessive breakage in transit. However, allowing for transportation there are still many kinds of roofing which are cheap enough to compete with Japanese tile. Conformity with Japanese taste and requirements accounts for the practical monopoly of the market by Japanese tiles in the past. The Japanese are very conservative in many ways and are also very artistic. For these reasons they will cling to their present picturesque and time honored construction so far as possible. The fact that several types of American roofing are, from the Japanese viewpoint, unsightly and not adapted to Japanese type construction will eliminate them from use in permanent construction. For example, the greater part of the temporary structures erected in the damaged area since the earthquake have galvanizd iron roofs. These roofs are cheap, durable, light and entirely practicable but they do not comply with the Japanese sense of the artistic and there will be, therefore, a tendency to replace them with more sightly roofs when permanent rebuilding commences. The same objection applies to certain types of prepared tar and asphalt roofs although there are others that conform to Japanese taste. Probably the best types are fire proof or fire resistant shingles.

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* * * *

"The zoning ordinance is the community's means of protecting itself from damage by the individual who regards only his own interest. It is as reasonable as the law against reckless driving. There can be honest differences on the subject, but the man who simply for his own profit tries to break through a zoning law against the wishes of all his neighbors deserves the maximum of public reprobation."

Despoliation

By VIOLA IRENE COOPER

THERE are certain persons to whom buildings, as such, are like people, standing for something to them, as one's friend stands for an ideal, or your enemy for the thing you despise. Like people, they may have a good deal of character, or they may have little: they may be distinct and superb, or they may be, like the simple countryman you know, plain and rambling and human.

Many times you will pass them unobservingly. Their faces are devoid of appeal. No line of subtle beauty stirs your heart or brings to life some gentle memory, no graven front to bid you pause with breath suspended! Other buildings you come to look upon with interest, and, often, as you watch them through a long acquaintanceship, you find some tendril from your heart going forth to twine itself about them.

Then, one day, comes the realization of all that the companionship means to you. You put forth your hand; you find it taken in a sudden, friendly grasp; your heart misses a beat, and you stand before the building you have grown to love, unable to speak because you have no common language.

From that moment you go out of your way to refresh yourself with the vision of a building—the one YOU love—standing tall and oblique against the sky, feeling that in it surely lie courage, and hope, and success. You watch the clouds as they bank themselves behind it. You search in the window markings for some long since forgotten story and then your fancy toys with the floors of the building, searching for new designs, a new play of symmetry. You watch for the

building's moods; you note each change of countenance, the ever-shifting drama of light, and shade, and color.

As the days go by, you find yourself depending upon the building for your strength, your moral strength, and as a musician turns to his harp, you find your eyes lifting to the lines of the building when you are weary. It is the one permanent thing on which you may count.

But the destinies of buildings, like the destinies of people, are controlled by an invisible hierarchy, and one day a change is begun in the building you like. An addition is being made, and atop the bricks and stone so nobly reared against the sky, a sign is being placed to flash its nightly message across the sky in a thousand twinkling lights. Day by day you watch the workmen creep about the iron framework, high on top the building. Counting them, you find they are ten in number. In your imagination you stand them one above the other until you find they would reach to the top of the sign—this superstructure upon a structure, fifty feet and more in height. You dwell upon the time it will take to complete the work. Your heart grows heavy. An addition is being made to the building, but something is also being torn down. The calm, steady message of the building you have grown to love is being taken away and in the sign across the building's roof a quicker way to advertise is being found. The building which stood for so much to you, through a long association, winning you to it gradually, and winning, in turn, your loyalty to the firm which stood behind it, can be what it was no longer. It is but a ruined shrine, a pedestal of the bizarre, the blatant.

The change has come about gradually, but at last the men have finished their work. Your steps take you past the same building day by day, and in the evening, when the first twilight comes on, you see the glittering lights of the advertisement flickering faintly: the attention of a million is being drawn to that which before had won the heart of but one! A million, but do they see what you saw, do they, too, feel loyalty, and comradeship, a deep, abiding faith? Their attention is caught and held but a moment. The sign has flashed its message. Your steps drag heavily. In the glare of the light above, the solidity beneath is lost, gone is the feeling of permanence, gone the sense of devotion to the men, the architects and the owners, who had made the building possible, a loyalty that was to have endured so long as stone remained on stone, standing forth in rugged simplicity.

You turn away your face. You can endure the sight no longer. The lights on the building have gone. The stars have paled from the sky. In the east the dawn is breaking. Before you stands a gigantic form and across its broad expanse of roof stretches a hideous, gaping sign. Can you look upon the sight? Ah, no! A truer friendship than this was yours, and now your steps must know another route.

A friend has been despoiled.

* * * *

Brick Gains in Public Favor

"Statistics show that in the last nine years the use of face brick for building purposes has increased 70 per cent," Douglas F. Stevens told delegates attending the thirty-eighth annual convention of the National Brick Manufacturers' Association held recently in Cincinnati, Ohio. "A brick building, five years after its construction, is worth more than when new," he said, "because it takes that long for the brick and mortar to become thoroughly unified."

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PROGRESS in the fine art of architecture can be attained only by every architect freely giving for the use and benefit of the profession all the details of his experience and technical developments so that there may be a continual advancement, it being, of course, a common duty that any man owes to his profession.
THEODORE ROOSEVELT.

PLANNING A BETTER COUNTRY

A score of years have passed since the movement for better planning began to develop the civic consciousness of our cities. The Washington and New Orleans plans were the only heritage along the lines of city planning left to us by the past generations and both plans were the work of two foreigners — L'Enfant and Bonnevelle. The Washington plan was creative through the initiative of the federal government and was inspired by George Washington, whose vision as a city builder was no less worthy than his leadership as a statesman and soldier.

After more than a hundred years the American government is again making itself the sponsor of good city planning and city building. This time it is the United States Department of the Interior that is assuming responsibility for the efficiency, adequacy and attractiveness of the new American urbanism and Mr. Herbert Hoover is the leader.

This new Bureau of Housing and City Planning of the Department of the Interior has a useful, but difficult task to perform. Let us hope that this new function of the government will extend its service to all fields of city planning and the interrelation between cities.

Regional planning is a new phase of this important work. The planning of the United States for recreation, transportation, highway provisions and orientation, park reservations and the conservation, exploitation and distribution of national resources, are all part of the problem of regional and national planning.

Instead of planning for cities the vision now widens towards the planning of a country and its people.
C. A.

SPANISH ARCHITECTURE: GOOD—BAD

The following communication signed "G. Helpus" and published in the Safety Valve department of the San Francisco Chronicle, needs to be answered by the profession. It is an injustice to those who have found success in their efforts to popularize Spanish architecture.

Editor The Chronicle—Sir: San Francisco has a competent art committee composed of Messrs. Howard, Cummings, Brown, Van Sloan, Bliss, Hobart, Polk, Kelham, Meyer, Reid, Randolph and Walters.

May we ask them to use their influence to discourage the adoption in San Francisco of the decadent architecture of Southern California which the natives call "Spanish"?

Particular reference is made to rough-troweled interior walls, called "jazzed," blistered exterior walls which resemble

poison-oak infection in an advanced stage and beautifully carved Spanish capitals supporting a barbaric pile of mud.

Like all fads, the Spanish type is now being fearfully overdone, distorted and exaggerated. Especially is this true in regard to colors. Some of the color schemes and combed effects adopted by speculative builders for the outside finish of small homes, both in Northern and Southern California, are little short of atrocious.

In competent hands and with the proper setting, there is no architecture more beautiful or appropriate for sunny California than the Spanish, but done by inexperienced designers this type of architecture becomes an abomination.

MARKETING MIXED CONCRETE

Will the next step in the direction of sub-contracting be the marketing of mixed concrete? The Cement and Engineering News of recent date brings up this very plausible question. Will it prove more economical to mix concrete in a large products plant and deliver it where needed? This is a problem that will come up in the near future.

The Cement and Engineering News has the following to say on the subject:

"Ready mixed concrete is a commodity which many of our larger concrete products plants ought to be in a position to supply. Although a few attempts in that direction have been made, we are not aware that any manufacturer has yet established a profitable business of this kind. Yet we have faith that the secret of successful marketing mixed concrete will soon be discovered somewhere, after which many will participate in a new and lucrative branch of the business.

"The city products factory, with its modern concrete mixing equipment, is the logical dispenser of mixed concrete for a wide variety of purposes. Concrete proportioned and mixed in the factory under the influence of routine methods of operation capable of almost laboratory precision, can be controlled much more easily and definitely inspected. Mixing is not interfered with by bad weather, nor is the mixture subject to inaccuracies often due to variation of grading or moisture in aggregate supply.

"Concrete can be mixed in the products plant to meet any specification and for any purpose. A few plants have excess mixing capacity, but additional mixing machinery could be installed easily enough to take advantage of possible demands for foundations, floors, walks, paving and other purposes. The mixed concrete can be trucked long distances over city streets or good country roads, and by this method materials are not piled up to congest thoroughfares or suffer damage by bad weather.

"Every city concrete products manufacturer should keep his ear to the ground so far as this mixed concrete business is concerned. We believe it is going to be developed and if so, the logical people to handle this business are those now operating substantial concrete products factories."

A SLUMP OR CONTINUED PROSPERITY?

The major sorrows of the construction industry have been caused by alternating boom and depression periods. In times of depression, a contractor can not get work unless he handles his profit shamefully. In periods of abnormal activity, the shortage of labor, excessive wages, bonuses, and inefficiency makes his bids look like an astrologer's guess.

Today the industry ought to be entering on a period of comparative stability following the year or more of abnormal building. A consistent demand exists; there is plenty of money available; the supply of mechanics has been greatly

increased; and contractors' organizations generally are in better shape to handle a fair volume of work.

The course of the industry during the next few months, declares a writer in the American Contractor, depends on the changes in construction costs. If costs are lowered, building will go steadily ahead. If they are raised much further, there can be no doubt about a genuine slump hitting the industry again.

ARCHITECTURE touches and influences life in many ways, some of which are obvious and familiar to all, while others appear only with thoughtful and searching reflection. The architect is, of course, a builder and something of an engineer, plumber, business manager, etc., as everyone's knowledge of the more obvious phases of the building business will tell him. In other and less obvious directions equally or even more important, his labor touches and vitally affects the work of the physician, educator, minister, as well as the lives of every one of us who live in buildings. For the materials of buildings, in competent hands, may be made to assume forms which instantly affect the mind, producing moods of tranquillity or restlessness, joy or depression, and so on, and this not only on minds specially trained in the analysis of impression, but in some degree and subconsciously upon all.

HORACE G. SIMPSON, *Architect.*

Traveling Scholarship Award for Architectural Student

A European traveling scholarship will be awarded to the student of architecture whose drawings were regarded as the best of those submitted in the recent exhibition held by the American Institute of Architects in Washington. This announcement was authorized by Professor William Emerson, temporary chairman of the American Institute of Architects Committee on Education, by which the award will be made.

The scholarship award will take the form of free membership in the group of practising architects and students of architecture, organized for travel and study under the auspices of the Institute of International Education. The leader of the group will be Professor Albert C. Phelps of the Cornell University College of Architecture. Members will sail from New York on July 5th for a trip which will enable them to study many of the most important buildings, decorative compositions, and works of landscape design in Europe.

BOOK REVIEWS

Edited by
CHARLES PETER WEEKS

Selected Monuments of French Gothic Architecture, consisting of 100 plates from the archives of the French Government Commission des Monuments Historiques. Published by Pencil Points, 19 East 24th St., New York City, N. Y. Price $6.00.

Drawings and photographs of the architecture of the past are indispensable in the practice and in the study of architecture. However, the books of plates containing such drawings are so costly that many architects are obliged to work under the handicap of an inadequate library and most draftsmen and students must depend entirely upon the books in the office or school, when they might derive much inspiration and development from studying such books at their leisure.

Knowing this condition and having found that the plate pages from old works on architecture published in Pencil Points are appreciated by a large number of readers, the publishers of Pencil Points have begun the publication of a series of reprints of old books of architectural plates under the general title of "The Library of Architectural Documents," with the purpose of making this material available for every one at as moderate a price as is consistent with a satisfactory presentation of the matter, not costly publications of limited appeal but a practical working library.

This, the third book in "The Library of Architectural Documents," comprises one hundred plates reprinted from "Cathedrales de France" and "Monuments Historiques," composing the great work in which carefully chosen examples of French architecture were shown by drawings and photographs from the archives of the French Government Commission on Historic Monuments. The original work, which was costly, has been out of print for some time, and few are so fortunate as to possess it or to be able to obtain access to it. From this store of material one hundred plates representing monuments of French Gothic Architecture have been reproduced to form the present book, in conjunction with text matter by John V. Van Pelt.

The fourth and fifth books in "The Library of Architectural Documents" will be devoted to French Romanesque and to Spanish Architecture, respectively.

These will be followed by other volumes, rounding out the series into a reference library embracing a wide range of the best material presented in such a way as to meet the requirements of the architectural profession.

"Selected Monuments of French Gothic Architecture," presents to the architect detailed information of a style of archi-

tecture too little known to be appreciated. The appreciation, however, of Gothic Architecture as to its adaptability to modern uses is growing, as evidenced by the West Street building, the Times building, the Bush Terminal, the Woolworth building, Hampton Shops and the Chicago Tribune.

The plates selected represent the highest type of French Gothic Architecture. It would be well for every architect and every student of architecture to have a copy of this book, for though he may not design in Gothic style, the underlying principle of movement, composition, direction, mass, and scale, as exemplified here, must be an inspiration to him working in any style.

Town Planning and Town Development, by S. D. Adshead; Published by Methuen and Co., Ltd., London.

Professor Adshead is too well known in the field of city planning to require anything beyond the mention of a book by him to arrest attention. This last work is valuable as a text book which, although devoid of technicalities, should prove useful to students in city planning.

From the point of view of the American reader there is little that has not been dealt with quite fully by writers in this country who have greater familiarity with American conditions. The chapter on "Area Utilization" is the most original and interesting, while the chapter on "The Sociological Basis of Town Planning," is unsatisfactory in its treatment and without the clear outline that the subject demands and warrants.

Engineers dealing with specific problems will find the volume suggestive and interesting although not wholly focused on the details regarding such problems.

—C. A.

Bungalows, Camp and Mountain Houses. Third Edition. 160 pages. Published by Wm. T. Comstock Co., 23 Warren street, New York. Price $2.50.

The name, "Bungalows, Camps and Mountain Houses," is an appealing one to Californians and we had hoped to find in this book something really worth while. The bungalow designs, as a whole, are disappointing. Two-story houses are classed as bungalows. The real California bungalow seldom exceeds a single story; the closer to the ground the more ideal the design. The section devoted to camps, lodges and log cabins contains several interesting plans. The bungalows in Porto Rico are fairly good. Mr. Schermerhorn's article on "Planning a Bungalow" contains many practical suggestions. In view of the fact that this is the third edition of this book, revised and enlarged, it is disappointing that it has not been brought a little more up-to-date.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Return from Institute Convention

The Pacific Coast delegates who attended the annual convention of the American Institute of Architects at Washington in May, have returned and will make a report to their respective chapters at the June meetings. Mr. W. B. Faville of San Francisco was re-elected president of the Institute for the third time, and Mr. Ellis F. Lawrence of Portland, Oregon, was elected first vice-president. With these two elections and that of Mr. Edwin Bergstrom of Los Angeles to membership on the board of directors, the Pacific Coast received fine recognition. Mr. Abraham Garfield of Cleveland was elected second vice-president.

Winner of Portland Competition

Architects Sutton & Whitney of Portland, Oregon, have been declared the winners of the recent competition for a Masonic Temple to cost $750,000. The design of this firm was awarded first prize by the jury which was composed of Architects Frank S. Baille of Portland, George Grove of Tacoma and Chas. Peter Weeks of San Francisco. The architectural advisor was Mr. Chas. B. James. Second prize was awarded to Whitehouse, Knighton & Howell and third prize to Lawrence, Holford & Dean.

Opens San Francisco Office

Mr. Benjamin Schreyer, a New York architect, has recently established offices at 105 Montgomery street, San Francisco. Mr. Schreyer has been retained as consultant architect for the Los Altos and Belmont Country Club properties. Although in California but a short time, he has already designed several very beautiful homes here and has plans for others under way. Mr. Schreyer is credited with having designed some of the magnificent residences in Kew Gardens and Great Neck, rendezvous of the New York wealthy.

Berkeley Residences

Architects Williams & Wastell, American Bank building, Oakland, have completed plans for two $15,000 residences in North Berkeley, one for Mrs. W. A. Beasley and the other for Mrs. R. Lloyd. Construction of both houses has been started.

Architect Claussen Busy

Although Architect C. O. Claussen has work in his office amounting to several hundred thousand dollars, he was able to get away the first of the month to attend the annual Shrine gathering at Kansas City. While East Mr. Claussen inquired into building conditions in the larger cities and he has returned to the Coast convinced that the building outlook in California is as good, if not better, than in the East. Mr. Claussen is building two apartment houses for himself in San Francisco in addition to a five-story reinforced concrete store and loft building on Market street near Eighth for a client; two mortuaries, one in the Mission district and the other in the Richmond district; an apartment house on McAllister street, one at Guerrero and Liberty streets and a new hotel at Quincy, Plumas county, the latter to cost $120,000.

Architects Granted Licenses

Certificates to practice architecture in California were granted during April to the following persons, all addresses, except otherwise noted, being in Los Angeles:

A. Godfrey Bailey, 410 Hill street building; Chas. R. Selkirk, 800 American Bank building; Raymond Ewald, 800 American Bank building; John D. Atkinson, 1800 S. Pasadena avenue, South Pasadena; George Guppy, 405 S. 5th street, Alhambra; Watson Vernon, 636 Roberts building; Edward P. Finegan, 1417 Acacia street.

Two Apartment Houses

Plans have been prepared by Architect Richard R. Irvine, Call building, San Francisco, for two apartment houses, one to be located on Filbert street, west of Van Ness avenue, San Francisco, for Mr. Ben Liebman and to cost $45,000, and the other on the west side of Franklin street, south of Francisco, for Mr. C. Giugni to cost $35,000.

Berkeley Residence

Architect W. H. Ratcliff, Jr., of Berkeley has completed plans for a frame and stucco residence for Mr. Arthur K. Sibley, manager of the Alumni Association of the University of California. Mr. Sibley was formerly connected with the Journal of Electricity in San Francisco.

New Homes at Pebble Beach

With many new residences in course of construction and plans drawn for several others, Pebble Beach, overlooking Carmel Bay on the Monterey Peninsula, is experiencing the greatest boom of its history. The new homes now being built or planned are all designed with a view to harmonizing with the scenic beauties of the Peninsula, and with a view to making the entire Pebble Beach colony architecturally the most distinctive of its kind in California. Spanish type architecture has been adopted in practically all the plans; brilliantly colored tile roofs, plaster walls and loggias, patios, characteristic of this type of architecture, blending with the beautiful combination of sea and landscape in which the colony is situated.

Latest among the home builders attracted to Pebble Beach is Mr. Gerald Cudahy of Chicago and Los Angeles, who has secured property and plans an elaborate establishment which will include in its equipment a private polo field. The adjoining property, owned by Mr. and Mrs. Harry Hunt of Burlingame and Coronado, will be embellished this summer with an attractive villa, plans for which have been made by Architect Clarence Tantau of San Francisco.

Plans are also being made for residences in the section of Pebble Beach for Mr. and Mrs. Harold Ward Law, San Francisco; Mr. Raymond Armsby, Burlingame, and Mr. and Mrs. Francis McComas, Monterey.

The Arthur Rose Vincent home, being built on the rocky point in the Seventeen Mile Drive near the Chas. W. Clark villa, will be an example of Spanish architecture similar to the Clark place. Plans were made by Architect George Washington Smith of Santa Barbara.

Plans for the Chas. Templeton Crocker home at Pebble Beach have been completed by George Washington Smith and building will start soon after the Crocker's return from Europe in the early fall.

Alhambra Architects Busy

Architects J. W. Smart and T. M. Carson of Alhambra, have just completed arrangements for the erection of a theatre building on Valley boulevard, Alhambra, to seat 1500 persons. Messrs. W. G. Kellow, Los Angeles, and Theo. Nagel of Chicago, are the owners. The building will cost in the neighborhood of $100,000 and has been leased to Messrs. Bard, Kellow & Bershom of Los Angeles and San Francisco, for a term of 15 years.

This is part of a large building development scheme by Messrs. Kellow and Nagel who have every confidence in the future of Alhambra. Immediately to the south of the new theatre the same owners are completing a store and apartment building, and plans are now in process of completion for a continuation of this building 150 feet on Garfield avenue, the whole scheme involving an outlay of $400,000.

Mesrs. Smart and Carson are the architects for all the improvement.

Design Many Apartments

Messrs. Baumann and Jose, 251 Kearny street, San Francisco, have more than $1,000,000 worth of apartment house work under way or on the boards. Most of the buildings range in cost from $50,000 to $100,000 each. The list includes three frame and stucco apartment houses on Union street, west of Pierce, San Francisco, for Mr. Emil Nelson; a three-story frame and brick veneer apartment house at Steiner and Hayes streets, for Mr. J. Feigin; a three-story frame and stucco apartment house at Filbert and Baker streets for Messrs. Maas & Sauer; a $60,000 apartment house at Sacramento and Steiner streets for Mr. G. Mertzback; a two-story apartment house on 2nd avenue, south of Geary for Mr. B. Rubin; a three-story apartment house on the southwest corner of 14th avenue and Anza street, for Mr. Fred Anderson and a three-story apartment house on the northeast corner of Chestnut and Gough streets, San Francisco, for Messrs. Stock and Jose.

Winners of Small Home Competition

Winners in the McGrath & Selover small homes architectural competition at Long Beach have been announced as follows: First prize, $500, C. W. Lemon, 3811 E. 4th street, Long Beach; second prize, $250, Kenneth S. Wing, 430 Rhea street, with the W. Horace Austin offices; third prize, $100, R. A. Sites, 427 Cedar avenue, Long Beach. Six smaller prizes were awarded as follows: $25, Miss Dorothy Witcher of the Harvey Lochridge office; $25, Lyle Wheeler of the W. Horace Austin offices; $25, Harold E. Burket; $25, Arne Sorvig of the Harvey Lochridge office; $25, Frank Wynkoop; $25, L. N. Nygaard of the Harvey Lochridge office. Mentions were: Lyle R. Wheeler, Ben H. O'Connor. There were 58 competitors.

Portland Bank Building

Architect A. E. Doyle of Portland, Oregon, is preparing plans for the new $300,000 home of the Bank of California, to be erected on the northeast corner of Sixth and Stark streets, Portland.

Designs for the building call for a three-story fireproof structure with terra cotta exterior and tile roof. The interior finish will be in marble and bronze.

Talk on Earth Stresses

Prof. Bailey Willis, of Stanford University, gave his talk on "Earthquakes—Their Causes and How to Build to Resist Earth Shocks," at the May meeting of Southern California Chapter, American Institute of Architects. Prof. Willis made a special trip from Palo Alto to address the Chapter in Los Angeles and his remarks were similar to his talk before the San Francisco Chapter published in this magazine for March. Prof. Willis presented stereopticon views of the damage done by the recent earthquake in Tokyo, and also views of the ruins in Chile caused by a very severe quake in that country a few years ago.

The Los Angeles delegates to the national convention of the A. I. A. in Washington, D. C., included Architects Reginald Johnson, D. J. Witmer, J. E. Stanton, Myron Hunt, A. A. Edelman, C. E. Noerenberg, Templeton Johnson, S. M. Spaulding and Edwin Bergstrom, the latter regional director.

President Johnson announced that members to serve on the Small House Committee had been appointed as follows: Architects Sumner Hunt, J. E. Stanton, Donald Parkinson, C. E. Noerenberg and A. C. Zimmerman. The purpose of the committee will be to encourage better architecture in residence construction.

From a Former San Franciscan

San Francisco architects will be interested to learn of the success of a former practitioner, Mr. Chas. Edward Hodges, at one time resident architect of Stanford University and later associated with the late W. Garden Mitchell. In a letter to The Architect and Engineer, renewing his subscription, Mr. Hodges writes:

"The last year has found me designing some of the largest New York schools, and more recently associated with a New York millionaire, who is cutting up his estate of 400 acres on Long Island. Being very high class property, all the work is of the best.

"My eldest son is now a professor at New York University, and another son graduates at Columbia University Department of Law this semester.

"Your magazine is the best published and it is a strong link in my past business career."

Architects Elect Officers

The following officers have been elected by the Washington State Society of Architects for 1924: Harry H. James, president; William J. Jones, first vice-president; Julius A. Zittel, second vice-president; T. F. Doan, third vice president; Watson Vernon, fourth vice-president; Emil Guentler, secretary-treasurer; Edgar Blair, trustee.

Personal

Mr. John K. Branner is another San Francisco architect to join this summer's pilgrimage to Europe.

Architect C. W. Dickey of Oakland will spend part of the summer abroad. Mr. Dickey is now in the East.

Architect Llewellyn A. Parker has moved his office from the Pacific Electric building to suite 1105 Kerckhoff building, Los Angeles.

Architect Frederick Soper has moved his office from the Kerckhoff building to suite 1133 Central building, Los Angeles.

Architect Richard M. Bates, Jr., has established an office for the practice of architecture at 1101 Brack-Shops building, Los Angeles, and will appreciate catalogs and samples of building materials and appliances. Mr. Bates is recently from New York City, where he specialized in bank buildings and banking rooms and in school house design.

Architect Kirby T. Snyder has moved his office from Los Angeles to 218 Citizens Bank building, Santa Monica, where he will practice his profession.

John B. Leonard, C. E., has moved from the Mechanics Institute building to 381 Bush street, San Francisco.

Architect John S. Siebert, 1363 Fifth street, San Diego, has moved to the Pacific building, 524 F street, San Diego.

Architect Cyril Bennett, who is associated with the firm of Bennett, Haskill and Bergstrom in the design for the proposed new municipal auditorium at Pasadena, is enjoying a three month's trip abroad.

Mr. Chas. W. Gompertz, a director of the San Francisco Builders' Exchange, is in the East on a combined business and pleasure trip. While away Mr. Gompertz will investigate all phases of the building industry. He will be absent two months.

Masonic Temple and Church

Plans have been completed by Architects Tuttle & Tuttle, 357 12th street, Oakland, for a $50,000 Masonic Temple at Ukiah and for a new church in Woodland and one in Burlingame. Bids have been taken for all three buildings.

Addition to Country Club

Plans have been completed by Architect Thos. J. Kent, associated with Mr. Lewis P. Hobart, Crocker building, San Francisco, for a one-story frame and stucco addition to the Burlingame Country Club.

To Design Club House

Architect W. L. Woollett of Los Angeles has been commissioned to prepare plans for a $250,000 country club building fifteen miles from San Diego for the Minnewana Ranch Club.

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Oakland Master Plumber Elected Head of State Body

MR. Harry G. Newman, well-known East Bay master plumber, who has been identified with the plumbing business in Oakland for the past fourteen years, was elected president of the State Association of Master Plumbers of California at the annual convention held in Pasadena, May 19th to 21st. Mr. Newman was further honored by being elected delegate to the National Association Convention of Master Plumbers to be held at West Baden, Indiana, the latter part of June. Other officers elected were: Chas. M. Swinerton of Los Angeles, first vice-president; Chas. R. Hutton of Los Angeles, treasurer; John L. F. Firman of San Francisco, secretary; Wm. P. Goss of San Francisco, Ralph Francis of Sacramento and Frederick Hyde of Fresno, members of the executive board. Mr. Hyde was elected to fill the vacancy caused by the death of W. H. Cox of Fresno.

Mr. Newman states that the association is in splendid condition, not only from the stand point of membership, but financially. A resolution was passed by the convention providing for the employment of two field agents to take charge of the educational work among members of the association. This work will consist of periodical visits to the business offices of members for the purpose of assisting them in the promotion of sales and in explaining more efficient methods of handling their business. The idea is to give the members more service, keeping in mind the maxim, "He profits most who serves best."

Business relations between the jobbers and master plumbers were discussed and the question of trade agreement was referred to the National Association, with a request that a legal opinion be obtained. The convention went on record as favoring segregated contracts on all public work. A resolution was adopted providing for the establishment of an insurance benefit fund, each member carrying a policy for $3000 payable upon death.

Mr. Newman is now attending the National Convention at West Baden. He will be absent until the early part of July. Mr. Newman is a director of the Rotary Club in Oakland, member of the Chamber of Commerce, Merchants Exchange and Sanitation Development League of Northern California. Among the contracts which his firm has successfully performed in Oakland is the plumbing in the Roosevelt High school, the plumbing and heating in the Women's Faculty club in Berkeley and the plumbing in the new Centerville High school, Alameda county.

Awarded Scholarship

A one-year scholarship has been awarded Mr. George W. Travis, draftsman in the employ of Architects Bakewell & Brown of San Francisco, by Harvard University.

The scholarship is one of the three offered in a contest to draftsmen for the most accurate and speedy work. Travis' work was a preliminary sketch of a concert pavilion which he completed in seven days.

School Architects Named

The Berkeley Board of Education has appointed Mr. James W. Plachek as architect for the new Cragmont school, and Mr. W. H. Ratcliff, Jr., as architect for the new Hillside school.

It is estimated each building will cost $150,000. The commissions are contingent that the proposed bond issue is carried in November.

Oakland Office Building

Plans have been completed by the H. H. Winner Company, Sharon building, San Francisco, for a seven-story Class C office building to be erected at 13th and Franklin streets, Oakland, for Mr. Carl Kaentsch. The building will cost in the neighborhood of $200,000.

Develops Planting Scheme

Emerson Knight, landscape architect, 9 Geary street, San Francisco, has developed a planting scheme and supervised plantings for the frontage and entrance of Burlingame Gate, a new subdivision being opened by Allen & Company at the northern part of Burlingame.

Addition to Department Store

Architects Wyckoff & White, San Jose, have completed plans for a $60,000 addition to the Chas. Ford Company's Mercantile store at Watsonville. The same firm of architects are completing plans for a new mercantile building at Salinas to cost $100,000.

Closes Office

The Buttonlath Manufacturing Company of Los Angeles, which has been operating in Northern California through its San Francisco connections, has closed its office in the First National Bank building.

Bungalow Court at Capitola

Architects Wolfe & Higgins have completed drawings for a bungalow court containing 46 houses of 3 rooms each for the Roth Realty Company of San Jose. The project will cost in the neighborhood of $150,000.

With the Engineers

The Engineer in Public Service

By IRVING MARTIN
Member California Railroad Commission

WHILE I am not an engineer, it has been my privilege for the past nine years to be very intimately associated in an official and working capacity with civil engineers. For four years a member of the State Water Commission, and following that service for five years a member of the State Railroad Commission, I have had wide and unusual opportunities for observing the civil engineer at work. Not being one of the profession but a co-worker with them, I feel that I am in a better position to form a more correct judgment of their ability and worth and value than I could were I a member of the engineering profession.

As a member of the State Water Commission I desire to state that the decisions of the commissioners, of whom there were three at the time of my membership on the commission, were in nearly every instance practically based upon the result of the investigations, analysis, and report of the particular engineer who would be assigned to make an investigation upon an application for a permit to appropriate water. The engineer would gather all available data that might have bearing upon the application and would report thereon to the commission. Upon the facts and the data as found and reported on by the engineer the commission would, to a large extent, base its judgment. Therefore, you can readily see what an important factor the engineer was in the functioning of the commission.

The same conditions also apply to the Railroad Commission, but the work there is larger and of far reaching importance to the people of the state. I desire to briefly review or follow through, as it were, the course of an application before the Railroad Commission in a rate proceeding. The application would be assigned to one of the five commissioners and he in turn would take the matter up with the particular department concerned —gas and electric or hydraulic, as the case might be. The department head would assign an engineer or engineers on the application and they would proceed to make a careful, thorough examination and a detailed report. Largely as a result of this engineering report the commission would arrive at what it deemed a proper rate base and on this base the rate would be fixed. In the case of large utilities, such as the Pacific Gas and Electric Company, the Southern California Edison Company, the Great Western Power Company, or the Western States Gas and Electric Company, the rate would mean a matter of millions to the rate payers of the utility. Therefore, you can see how very important is the work of the engineer in connection with the Railroad Commission.

Not always and not necessarily, but generally speaking, it is the engineer through his investigations that practically fixes the rates of the California utilities. The commissioners outline policies, establish principles, and follow legal interpretations and court decisions, but the practical part of the work is that of the engineer. And I want to say this: Speaking of the engineers as a class, as I have found them in my association with them in official work, they have trained minds, have absolute, unswerving honesty, and are devoid of all favoritism or prejudices. They go straight to the heart of a matter and right to the bottom of it for the facts. They hew straight to the line and let the chips fall where they may. Their minds work along trained, scientific channels and ravel straight to the goal.

The general public owes far more than it realizes to the efficiency, the honesty, the industry and enthusiasm of the engineer in public service.

Registration for Engineers

At the recent meeting of the Minnesota Surveyors and Engineers' Society, Mr. M. E. Chamberlin, member of the state board of registration of Minnesota, stated there are now 424 registered practicing engineers in that state. He called attention to the need of correcting the public impression that the code of professional ethics of engineers is similar to labor union regulations.

"Twenty-nine states and the Dominion of Canada have legalized registration for architects, engineers and surveyors," said Mr. Chamberlin. "The registration boards of twelve states have agreed to reciprocal registration. The architectural and engineering councils of the state boards are now working on a uniform registration bill. Regardless of the strength and perfection of registration laws, however, the practitioners must furnish the motive power to make the grade to a higher

professional standing."

"To reach the plane of equality, before the public, with the other learned professions, we must take three distinct steps." Mr. Chamberlin named these as being "worthiness," "co-operation" and "publicity."

Ethics for Engineers

Should engineers submit competitive bids for services or furnish with their bids bonds guaranteeing satisfactory service or cost of construction work? These are questions of ethics which are considered in practice case No. 45 submitted by the national practice committee of the American Association of Engineers to the board of directors for approval. Following is the committee's statement on case No. 45:

Several instances have recently been reported of cities inviting engineers, by letter or advertisement,

(a) To submit competitive bids or sealed proposals for furnishing specified engineering services;

(b) To furnish, with their bids, bonds for the satisfactory performance of their services;

(c) To furnish, with their bids, a guarantee that the cost of construction will not exceed their estimates.

Q. 1.—Are any principles of good professional conduct violated by engineers tendering their services under the terms outlined?

Answer 1. (a)—For engineers to submit competitive bids or sealed proposals for furnishing specified engineering services is not consistent with the highest professional standards. Competition between engineers for professional work should be minimized; it should be countenanced, if at all, only in those cases where professional qualifications are clearly the paramount consideration and the question of relative fees is not a deciding factor. To make professional work a matter of money competition not only lowers the standards of the profession but is detrimental to the interests of the public. It may be viewed as a violation of the "Specific Principles of Good Professional Conduct." Part 4, Clause 8.

(b) and (c)—The requirement for engineers to furnish bonds for the satisfactory performance of their services or to furnish a guarantee that the cost of construction will not exceed their estimate, should not be tolerated. Such requirements are incompatible with a sound and conscientious professional attitude of the engineer toward his client and his work, and unavoidably conflict with proper discharge of the engineer's obligations to his clients. The public should be educated to a proper conception of the professional attitude which gives its best in service or expert advice without influence or prejudice by fear of penalty or hope of reward.

Q. 2.—Formulate principles to cover the proper conduct of engineers with regard to such conditions.

Answer 2.—The following statement of principle covers the proper conduct of the engineer with regard to the conditions above discussed:

He should maintain the professional attitude in negotiations for his services, and should decline to submit competitive bids for professional services, to furnish bonds for satisfactory performance, or to guarantee estimates.

It is recommended that this statement of principle be inserted in the place of the cancelled Clause 8 of Part 1 of the "Specific Principles of Good Professional Conduct."

World's Largest Brick Plant

The Los Angeles Pressed Brick Company is erecting an addition to its tile plant on Date street which will cost, including equipment, about $225,000. President Howard Frost says this addition will make the company's plant the largest in the world in point of production and the most efficient in operation. The building program includes a Harrop tunnel railway kiln to cost $100,000, with a capacity of 50 tons of burned tile per day; a specially constructed dryer which will reduce the drying time from 36 to 4 hours, and an aerial tramway to cost $30,000. The new kiln will reduce the burning time of roofing tile from 240 to 60 hours and effect a saving of 70 per cent in fuel, 25 per cent in labor for loading and 40 per cent in labor for removing tile from the kiln cars. The dryer is the first of its kind installed in the west. It will be 81 feet long and will have four tracks. Two Westype steel buildings to house the addition to the plant are being erected by the Union Iron Works. The new unit will be in operation by July 1.

New Heater

A new electric heater, known as the Solar Glow, suitable for use as a room heater and as an auxiliary heater in extremely cold climates has been recently placed on the market by the Westinghouse Electric and Manufacturing Company. The heater is a combination of both the convection and radiation type, for, in addition to heating through the utilization of air currents, radiation is effected from a buffed copper reflector placed around the heating element. This combines the uniform heating ability of the convection heater with the cheerfulness of the radiant type.

The Solar Glow heater has a cast iron frame, faced with statuary bronze. It is finished on the sides and back in antique bronze so that it may be placed in any part of the room as well as inside a fireplace.

Building Material Exhibit Has Auspicious Opening

ARCHITECTS will find a great deal to interest them at the exhibit of building materials in the main floor of the Sharon building, San Francisco. Contractors, too, will find here a very complete assortment of equipment and machinery. Formal opening of the exhibit took place May 6th, with Mr. Frank O'Kane, the manager, presiding at the banquet table and surrounded by several hundred guests. Mr. O'Kane pointed out the advantages offered in a display of building material products under one roof and urged the architects and contractors to bring their clients to the exhibit where they might select materials or equipment that would suit their purpose. Mr. William Gray acted personally as toast-master and opened the banquet with a Scotch prayer. Acting Mayor Ralph McLeran, introduced by Mr. Gray as the "next mayor of San Francisco," was the principal speaker of the evening. Mr. McLeran urged co-operation of the construction interests in the maintenance of a building material exhibit and complimented Mr. O'Kane and Mr. F. K. Clifford for their progressiveness. Mr. McLeran also commented upon the progress of the city officials with regard to construction to be undertaken under the $12,000,000 school bond issue and the $2,000,000 relief home plant.

Architect Walter O'Brien, of O'Brien Bros., Inc., and Architect William Mooser spoke on the advantages of an exhibit from the architects' point of view.

Mr. O. K. Brown of the Built-In Fixture Company of Berkeley, one of the largest exhibitors in the Sharon Exhibit, spoke on the value of a material exhibit from the manufacturers' point of view. Mr. Brown advocated the organization of an Exhibitors' Club which, he thought, would tend to create better fellowship among the exhibitors and create a feeling of "one for all and all for one."

Firms represented at the opening included: Argus Manufacturing Co., Williamson Heater Co., Jamestown Metal Products Co., Perfectlite Manufacturing Co., Duroxo Manufacturing Co., E. J. Wirfs Weather Strip Co., Peerless Built-In Fixture Co., Standard Brass Casting Co., A. Strach, Electric Heating Engineer; Drake Lockout Co.; California Sugar White Pine Association; Acme Fixture Display Company; Gas Heating Co.; Chase Co's. of California; National Paper Products Co.; Builders Service & Supply Co.; California Brick Co.; Fox Furnace Co.; (Sunbeam Furnace); Crane Co.; United States Rubber Co.; Columbia Steel Co.; Western Brass Manufacturing Co.; Hauser Window Co.; United States Metal Products Co.; American Brass Co.; Gogle Hand Forged Tool Co.; Pacific Materials Co.; Forderer Cornice Works; Pacific Gas & Electric Co.; Billings & Spencer Co.; Pacific Rolled Metals Co.; Isko Pacific Co.; Sands Heater Co.; Marshall Newall Supply Co.; Westinghouse Electric Co.; Estate Stove Co.; Fuller & Goepp; Alcazar Range & Heating Co.; Golden Gate Concrete Co.; Marion Electric Range; Cookson & Sullivan; California Mognacrete Shingle Co.; Joseph Johnson & G. M. Josselyn Co.; Schlueter Commercial Co.; W. Wesley Hicks; The Schlage Co.; H. H. Robertson Co.; Home Laundry Machine Co.; Duane L. Bliss Co.

Wall Bed Company Expands

Owing to the large volume of building now being done on the Pacific Coast and the keen competition among all the building material and equipment manufacturers, the merchandising of building materials and equipment has become a scientific business problem and considerable thought must be given to the sales policy and the manner in which the successful firm products are presented to the buying public.

In line with the policy of national organizations such as Crane Company, Standard Sanitary Manufacturing Company and the Ruud Heater Company to have showrooms for the convenience of the general public, the California Wall Bed Company of San Francisco has acquired lease of a most desirable store on Sutter street, between Grant and Stockton, and alterations are now being made which will make this one of the finest and most complete exhibits of wall beds on the Pacific Coast. All the latest types of installations will be shown together with the many designs and styles of California wall beds. Architects, contractors and builders are invited to call and inspect at their leisure and to send their clients to these show rooms with the assurance that they will receive every courtesy and consideration.

The California Wall Bed Company also has show rooms at 165 13th street, Oakland, and at 1040 South Broadway, Los Angeles.

Excessive Fuel Consumption

A recent folder published by the C. A. Dunham Company is entitled "Excessive Fuel Consumption," and is intended to impart valuable information to those interested in solving problems and troubles that have to do with excessive fuel consumption from the angles of installation, dirty boiler or piping system, foaming or priming, and improperly designed chimney. It also suggests practical methods by which these troubles can be corrected.

A Built-In Dishwasher of Interest to Architects

By G. H. OYER

There have been many electrical appliances and labor saving devices placed on the market in the last few years. Some have been useful while others have become actual necessities, for example washing machines and vacuum cleaners. The writer recently witnessed a demonstration of an article which promises some day to be used in every home. It is sure to appeal to the women folks because it is primarily intended to lighten their labor. The architect and contractor, too, will be interested, because of its built-in and space saving features that make it desirable in both apartment house and home.

The appliance is known as the Fassio Dish Washer, more aptly termed by its manufacturers, "The Magician of the Kitchen." The dish washer is composed of a standard sink of twelve inch depth with motor and centrifugal pump attached. This is set up on a strong angle iron stand. The cabinet and drain boards, of either tile or composition, are installed like any ordinary sink and when completed look the same. There are but three outlets in this sink and when not in use as a dish washer can be used like an ordinary sink. The dishes are placed in a special rack so that the water reaches every part of the surface. A flexible shaft is attached to the motor on which can be used a stiff revolving brush to scour pots and pans, a mixer to beat eggs or a buffer to polish silverware. With a small attachment which is furnished it also can be used to freeze ice cream. Another special attachment permits the washing of linen or lingerie in the sink.

The manufacturers have experimented with this machine for eleven years and have finally placed it on the market with a minimum of parts and at a very low price. Electric power does it all and the writer confidently believes that some day this dish washer will rank with the washing machine and vacuum cleaner. A complete exhibit has recently been installed in the Sharon Building Material Exhibit, 55 New Montgomery street, San Francisco, where architects and their clients are welcome.

An Economical and Efficient Electric Air Heater

The use of electrical appliances and equipment on the Pacific Coast is becoming very popular due to the low combination rates for electricity now in effect. The manufacturers of electric ranges, air heaters and water heaters are consequently establishing branch offices or appointing distributors in this territory. One of the latest to complete arrangements to market their product on the Pacific Coast are the manufacturers of Glolog — an electric air heater. This product should interest architects for it is an ornament to the room as well as an efficient air heater.

The "Glolog" does not require a flue or vent, which is interesting as well as economical. It means that costly flue construction, dampers and ash pit doors are eliminated—and merely a false work to receive the chimney piece (mantel) is substituted. This saving is much above the initial cost of the log and if provided for when plans are drawn, the wiring cost is practically nil.

The "Glolog" is made of hard burned fire clay with the color burned in. The heating element is the best known resistance wire, coiled in the bark crevices. It is unbreakable under ordinary usage and should last a life time.

"Glolog" is made by Strait & Richards, Inc., of Newark, N. J., and distributed on the Pacific Coast by the Atlantic-Pacific Agencies Corporation.

New House Plan Book

The new House Plan Book issued by the Portland Cement Association illustrates and describes forty different designs intended to be constructed of concrete block with Portland cement stucco.

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Facts About Ready Roofing

By J. I. HOLDER*
Engineering Department, The Paraffine Companies, Inc.

THERE is a fast growing tendency, insistent and compelling, toward the use of prepared, or ready roofings in built-up roof construction. Why? Isn't asphalt saturated felt good enough, at least to form the underlying structure for the cap sheet and the surfacing material, if any? Many of the best architects and engineers say, "No." The answer is based on long experience and sound reasoning.

Felt for built-up roofing purposes is made and used chiefly in two standard weights, ten pounds to the hundred square feet. Here on the Pacific Coast it is almost exclusively confined to a saturant of asphalt. Practically no coal tar saturated felt is used here.

Prepared, or ready roofing is really an asphalt saturated felt with a coating or layer of asphaltum on both sides. The standard weights are known as light, medium and heavy, weighing approximately thirty-five, forty-five and fifty-five pounds respectively per one hundred and eight square feet, which is sufficient material to cover one hundred square feet, the extra eight square feet being allowed for a two inch lap.

Asphalt saturated felt is not weatherproof in itself. A bitumen of some nature must be used with it in built-up roof construction. Asphalt is usually employed. If you have observed workmen using the mop you will notice that the mop comes out of the bucket "loaded" with asphalt, and is then spread over a given area. The good mopper obtains a fairly even distribution; but even the good mopper now and then misses spots, or tries to cover too much area, resulting in "dry" or "lean" places. A roof is no stronger than its weakest part. These "dry" or "lean" spots may be few and far between, or they may be numerous, but they are usually there. Now what happens? The asphalt saturated felt dries out at these "sore" places, and leaks soon occur here and there unless the roof surface is given periodical treatment, and even such treatment doesn't always effect a cure, particularly if the roofing has been applied over boards. Roof boards have a habit of shrinking. When shrinkage takes place the "sore" spots in the roof are frequently dry and brittle, and cracks occur in the roofing. All this takes place from the under side of the roofing. The roof frequently looks good on top, but beneath it is all too often a spotted "shell."

This condition is obviated by the use of prepared or ready roofing, which is waterproof in itself. The coating on both sides of the felt core, or center, resists moisture and keeps the sheet from drying out. There may be "lean" moppings, but the heat of the mop as it passes over the sheet softens the coatings sufficiently to fuse or bond the sheets together.

Further, prepared roofing lays smoother and can be mopped more easily than felt, the latter having more tendency to wrinkle and buckle, causing bulges and pockets in the roofing when completed. Prepared or ready roofing has the tensile strength to expand and successfully bridge the open spaces which occur be-

*Mr. Holder was formerly secretary-treasurer of the National Association of Roofing Contractors, now known as United Roofing Contractors' Association. He is considered one of the nation's leading authorities on roofs.

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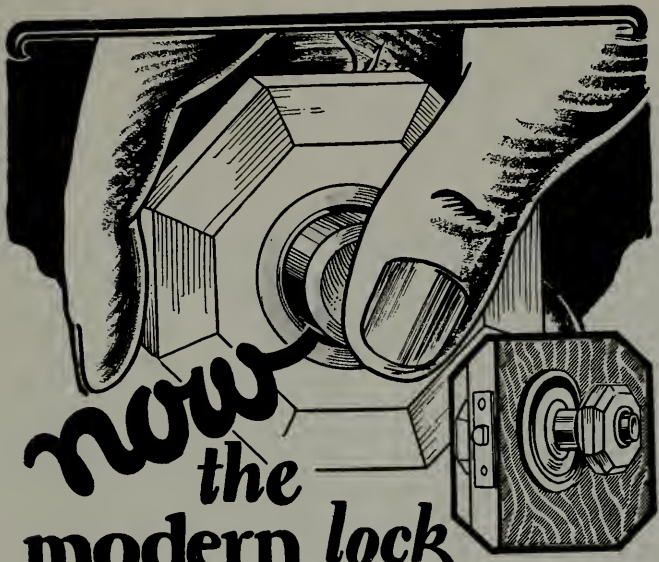

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tween the roof boards, due to shrinkage or settlement. Felt has a hard time performing this function, even when properly mopped with asphalt between the layers.

In short, prepared or ready roofing being more fool proof against careless workmanship, more adaptable to roof deck surfaces, more inherently permanent in its construction, and one-hundred per cent more waterproof than saturated felt for built up roof construction, the building world may look forward to the "passing of felt" as something which has served its purpose, but, as is the case with all things, is being supplanted by something better.

RECENT TRADE PUBLICATIONS

Panic Door Device Catalog

A valuable illustrated trade catalog intended for the guidance of architects and others who may have occasion to use panic door devices, has just been published by the Vonnegut Hardware Company of Indianapolis, Ind. This company manufactures the well known Von Duprin self releasing fire exit latches which have the approval of the Underwriters Laboratories of the National Board of Fire Underwriters, and which have long since demonstrated their worth. With such horrible catastrophies as the Irequois theater fire, the burning of the Lakeview school and the Rhodes Opera house fire at Boyerton, Penn., still fresh in the minds of the public, the prevention of a repetition of these holocosts is made possible by the use of the Von Duprin fire exit latches. The manufacturers of the device are prepared to prove that no Von Duprin fixture anywhere has ever failed to operate in an emergency. The catalog just published gives pictures of many prominent buildings that have been equipped with these self releasing devices, together with illustrations of the different models manufactured to answer the particular needs of the building in which they are to be installed. The C. H. Jensen Company, New Call building, is the San Francisco and Northern California representative of the Vonnegut Hardware Company.

Unique Brochure

The Atlas Portland Cement Company has recently published a brochure which is unique in that it contains many pages of half tone photographic reproductions of the cover pages of various periodicals, (technical and trade), in which Atlas advertising appears or will appear during the current year. A fine likeness of The Architect and Engineer cover is shown on the same page with reproductions of other leading architectural journals which carry Atlas advertising. It is a nice compliment to the publications and at the same time it gives the public a pictured impression of the extent of this company's publicity work. The message of Atlas is carried through the medium of these publications to every architect, builder and owner from one end of the continent to the other.

Making Letters Talk Business. Published by The American Rolling Mill Co., Middletown, Ohio. 185 pages. Price $1.25.

This is a revision of earlier booklets issued by the American Rolling Mill Co., entitled "Mechanics of Correspondence," and "Principles of Good Correspondence," and to which has been added an entirely new section "Essential English." The book has been carefully written, giving as it does the results of five years intensive research. It is a valuable asset to any business or professional man's library. Mr. Sherman Perry, correspondence adviser of the Rolling Mill Company, writes that his company is not in the publishing business, nor is the book a money-making venture. The nominal charge of $1.25 a copy is made on account of the heavy cost of publication.

Steel Casements

A new catalog has been announced by the Detroit Steel Products Company, Detroit, Michigan, containing illustrations and descriptive matter of a new line of domestic casement windows (all steel) to be sold under the trade name Fenestra.

These new casements are available in numerous types and sizes, and are recommended particularly for homes and apartment buildings. Copies may be had by architects, contractors, investment builders, etc., upon application to the manufacturers. A model of the new casement may be seen in the San Francisco office of the Detroit Steel Products Company, 251 Kearny street.

Handy Folder on Built-In Fixtures

The Built-In Fixture Co., 2608 San Pablo avenue, Berkeley, has issued a handy file folder for use of architects and builders. The book contains detailed data sheets to supplement information in the company's catalogue. The sheets give a working knowledge of Peerless Built-In furniture in such a way as to enable the designer to plan a kitchen having in mind the exact working drawings of the product. Copies will be furnished on request.

Distinctive Houses of Indiana Limestone. Vol. 12, Series B.

A very handsome book, beautifully printed on heavy coated paper stock. Half tones and tint blocks bring out the detail of many buildings constructed of

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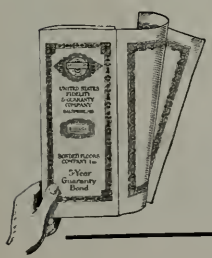

Descriptive literature showing typical installations, pattern suggestions and other interesting material will be sent on request.

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limestone. This is not a technical book but it is sure to appeal to architects interested in fine house designs. It is better than the average book listed as manufacturer's literature. It may be had free on application to the Indiana Limestone Quarrymen's Association, Bedford, Indiana.

New Westinghouse Lighting Publication for Architects

A publication of great value to architects in drawing up plans for ornamental exterior lighting is being distributed by the Westinghouse Electric and Manufacturing Company. The publication, which is known as Number C 1674, is entitled, "Ornamental Brackets, Newels and Lanterns." As it has been issued primarily for use in architects' offices, the filing classification of the American Institute of Architects has been inscribed on the cover of the book to facilitate its use as an office reference.

A great number and variety of exterior lighting units, artistically designed for use in the illumination of entrances and facades of public buildings, the gateways of residences and private grounds, and the passage-ways of bridges and viaducts, are included in this comprehensive publication. With the requirements of the architect particularly in mind, an excess of descriptive matter has been dispensed with, yet each unit is so adequately presented that its adaptability for a particular installation can be readily determined. For every type of fixture included in the booklet, a clear photograph and a dimensional drawing are provided, together with a very brief description. Views of actual installations of many of the units are also contained.

These paragraphs from the foreword to the publication indicate the purpose for which it is issued:

"Modern lighting science has made it possible for the architect or illuminating engineer to retain the decorative motifs of the early centuries in combination with the most efficient equipment for distributing light.

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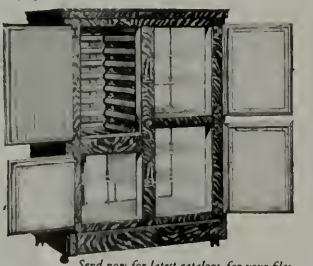

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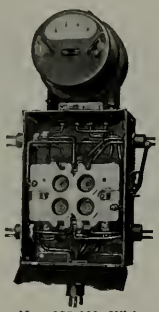

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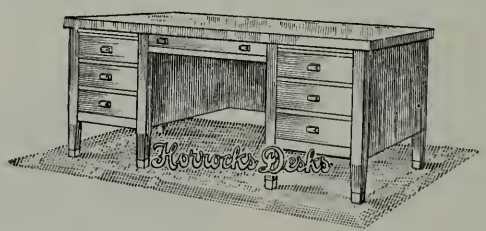

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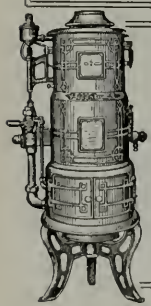

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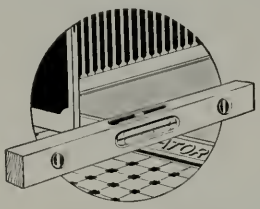

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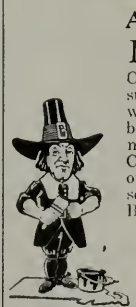

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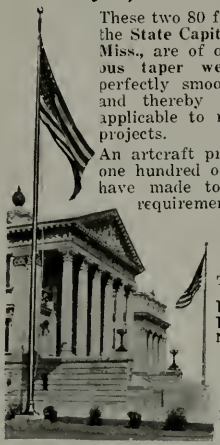

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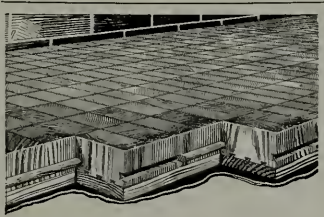

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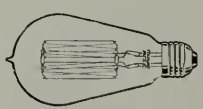

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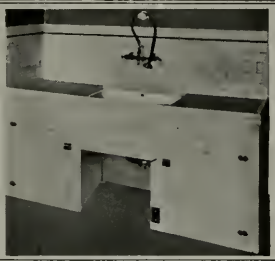

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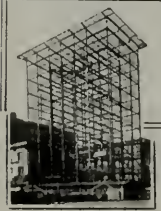

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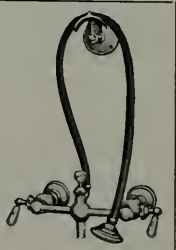

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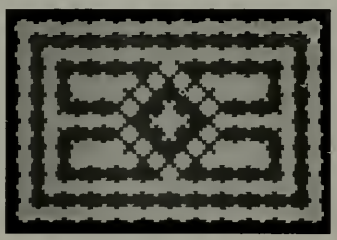

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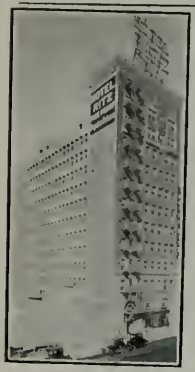

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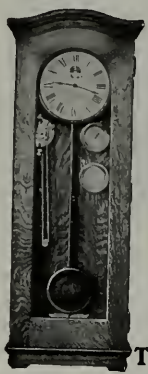

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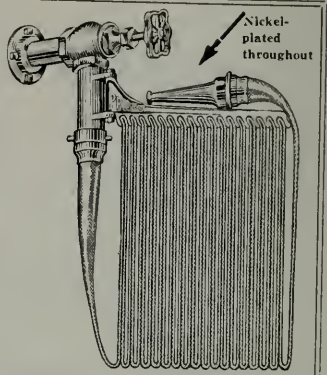

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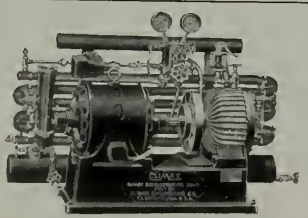

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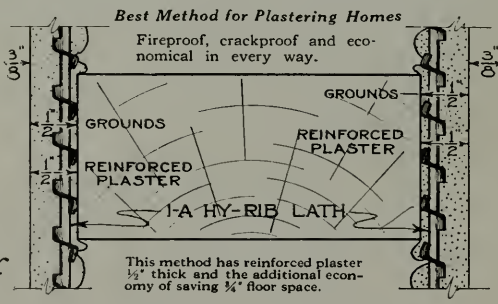
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